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CANCER OF THE PROSTATE: THE SILENT MAN-KILLER

• Cancer of the prostate is second only to cancer of the lung as the most common cause of death from malignancy in Americans over fifty years of age.

David D. Miles, M.D.

In 1959 carcinoma of the prostate was responsible for the deaths of 14,037 American men.[1] In 1951 it was found to occur in 18% of all men over 50 years of age. Hudson's 1957 "Bowery Series" found that it occurred in 11% of all men over 40.[2]

Etiology

At the present time the etiology of prostatic carcinoma remains unknown but approximately 85% are androgen-dependent.[3]

Pathogenesis

The neoplasm originates by malignant change of the epithelial lining of the prostatic ducts. Approximately 90% have their origin in the posterior lobe which is created by the plane which the ejaculatory ducts form while traversing the gland from above, downwards and medially. The vast majority of prostatic malignancies, 98%, are adenocarcinoma, and the remaining 2% are comprised of squamous cell carcinoma and sarcoma, the latter accounting for less than 0.1% of all prostatic malignancies.

Squamous cell carcinoma is highly malignant and seldom diagnosed in an early stage. It is rarely found as a solitary lesion as most are associated with advanced adenocarcinoma of the prostate. It is of interest to note that squamous metaplasia is frequently seen in combination with prostatic infarcts or calculi and following estrogen therapy or cryosurgery of the prostate. The prognosis for squamous cell carcinoma of the prostate is extremely poor. There have been no cures reported from surgery, and the response to irradiation and chemotherapy has been disappointing.

Like squamous cell carcinoma, sarcoma of the prostate is usually far advanced before it produces symptoms. Approximately 30% or more occur in children and 80% develop before the age of prostatic enlargement. The bladder and rectum are more common sites of origin for sarcoma than is the prostate, and for this reason it is often difficult to determine its origin. The prognosis is poor;

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young individuals rarely survive more than seven to twenty-four months after the diagnosis is made. An exception to this is a four-year-old child, treated in our department, who is alive and well today following cryosurgery for sarcoma of the prostate two years ago. At present there is no evidence of recurrent malignancy.

Routes of Dissemination

Carcinoma of the prostate has three routes of dissemination: direct extension, hematogenous, and lymphatic spread. As previously noted, the majority of these cancers originate in the posterior portion of the surgical capsule, which is composed of compressed peripheral prostatic tissue. Occasionally prostatic carcinoma may be located within the hyperplastic periurethral glands; these are the carcinomata designated as "occult." After originating in the capsule these cancers usually continue to spread in the capsule and later involve the periurethral hyperplastic tissue as well. Thereafter the seminal vesicles may become involved, and it has been found that with involvement of these, 80% of patients will have simultaneous involvement of the pelvic lymph nodes. There also may be extension to the urethral mucosa or bladder wall. Because Denonvillier's fascia acts as a barrier there is rarely invasion of the rectal wall.

Blood-borne metastases occur, especially by the vertebral and paravertebral veins of Batson. This event is usually in the later stages of the disease but can occur prior to the development of urinary difficulties. The bony pelvis and lumbar spine are the most common sites for bony metastases. Bone marrow invasion is common. Metastasis to other organs, especially the lungs and liver, also occurs. Lymphatic spread may involve the vesical, sacral, external iliac and lumbar lymph nodes.

Histology

Microscopically carcinoma of the prostate may be epithelial or may be scirrhous; the epithelial type may form a papillary pattern or may be anaplastic. Invasion of perineural sheaths is common but is not necessarily of prognostic importance.

Symptoms

Many men with carcinoma of the prostate are asymptomatic. Of those with symptoms, 95% present with symptoms of obstructive uropathy, urinary tract infection, or both. Five per cent of patients have their first symptoms from metastases, the most common of which are pain, abdominal mass, anemia, and weight loss. Unlike its occurrence in benign prostatic hypertrophy, hematuria is a late symptom in carcinoma of the prostate, occuring secondarily to urethral or bladder involvement.

Diagnosis

It was once said that in order to diagnose one must suspect, and in order to suspect one must know. It is, therefore, most important that every physician know and believe in the value of the rectal examination, which is relatively simple, convenient and non-time consuming. This examination is probably the most important part of the physician's diagnostic armamentarium against carcinoma of the prostate. Studies done at the Brady Urological Institute have shown that of all routine rectal examinations in which induration or localized nodules of the prostate were found, 50% were proven histologically to be malignant. In differentiating between a benign and a malignant nodule of the prostate, the latter is usually not elevated above the surface of the gland, and there is a sudden change in consistency between it and the surrounding prostatic tissue. With advanced lesions, the gland will be very hard and fixed, and there may be involvement of the seminal vesicles. With these findings, differential diagnosis besides cancer should include: tuberculosis, granulomatous prostatis, and prostatic calculi.

Histological confirmation is essential for a diagnosis of prostatic carcinoma. Doctors Glenn and Boyce in their new book state that between the clinical extremes of obvious benign or obvious malignant disease of the prostate, the accuracy of rectal examination is no greater than 50%, regardless of the examiner's experience.[2] Biopsy of the prostate may be performed by employing any one of the following routes: 1) percutaneous, 2) transurethral, or 3) open biopsy (perineal or retropubic). Bone marrow aspiration can also be an important part of the diagnostic workup.

Other diagnostic tests include acid and alkaline phosphatase, the latter being elevated if bony metastases are present. Significant elevation of acid phosphatase is pathognomonic of advanced carcinoma of the prostate, even in the absence of demonstrable metastases. When the cancer extends outside of the capsule and metastases are present, 75% of patients will have significant elevation of the acid phosphatase.

Urine LDH (lactic dehydrogenase) may be increased with carcinoma of the prostate, but this is a non-specific finding.

Cytologic studies of prostatic fluid have been found to be of no value in early cases of carcinoma of the prostate and are not needed in the advanced cases.

X-rays are an important diagnostic tool in this disease. The chest x-ray may show evidence of parenchymal or bony metastases and film may show evidence of osteoblastic metastases. Intravenous pyelography or urogram mav demonstrate hydronephrosis indicating ureteral or vesical neck obstruction. Recently the 85 strontium scan has been employed to demonstrate evidence of early bony involvement when routine x-rays have failed to do so.

Cystoscopy is done to rule out bladder or urethral involvement.

Treatment

The treatment of carcinoma of the prostate is planned to be curative or palliative depending on the stage of disease when first detected. For curative results, radical surgery usually consisting of prostatovesiculectomy is the treatment of choice. Radical prostatic surgery is also currently being used for long-term palliation, not only to increase longevity but to make the increased longevity worthwhile in terms of comfort.

At present, of all the patients with carcinoma of the prostate, only 5% are candidates for curative surgery because of either their age or physical status.[4] Today if a patient is 75 years of age or less and has a reasonable life expectancy of three years or more, then he should be considered for radical prostatic surgery.

If the patient is not found to be a candidate for radical surgery, he should be considered for palliative measures, depending upon his findings and complaints.

The list of palliative measures is long and includes:

1) Orchiectomy and/or estrogen therapy. (Recent studies conducted by the Veterans Administration have shown no difference in effectiveness between each of the above, alone or in combination.[5] It was also found that little benefit was obtained from immediate treatment with either unless the patient was symptomatic. It seemed to the VA researchers that the decrease in mortality brought about by estrogen treatment is outweighed by the increase in mortality from cardiovascular disease, which might be attributed to sodium retention or interference with the normal clotting mechanism.[6])
2) Medical adrenal suppression using cortisone
3) Surgical adrenalectomy
4) Hypophysectomy
5) Cryosurgery of the prostate
6) Transurethral resection of the prostate
7) Ionizing radiation. Approximately 1/3 of patients with advanced carcinoma may be benefited.
8) Chemotherapy. At present there is no agent available for routine use. However, chemotherapy is preferred to radiation therapy for malignant lymph nodes outside of the pelves or when malignant cells are found in bone marrow aspirations.
9) Chordotomy or tractotomy for intractable pain. This procedure merits relatively early consideration when the pain becomes intractable.

Continued on page 8

INTERFERON: A Review

• **Interferon is an inhibitor of viral multiplication. In this review its physiochemical and biological characteristics are examined, and data related to its prophylactic action and prospects for the future are outlined.**

Ellen Levy Koenig

In 1957, Isaacs and Lindenmann[1] reported on a cellular product preventing viral infection. Their experiment consisted of placing pieces of chick chorio-allantoic membrane in contact with heat-inactivated influenza virus for 3 hours, washing free the unabsorbed particles, and then refeeding the membrane with fresh buffer for 24 hours. The medium in which they had remained overnight was then incubated with fresh pieces of membrane. Twenty-four hours later, these tissues were incubated with another virus. A marked decrease in viral production could be detected in the treated cultures. The cellular product responsible for this phenomenon was termed interferon (IF).

Interferon is a protein of molecular weight about 25,000 (the same as the enzyme chymotrypsinogen and one-eighth the weight of human globulin). It is a neutrally charged molecule containing some carbohydrates, and most, if not all, of the common amino-acids. In most studies in the literature, interferon is described as strictly species specific with regard to its protective action against viruses, though some recent work in our laboratory has indicated otherwise.

At first the chicken served as the main experimental system, but today mouse and murine tissue culture systems are the most extensively used, though much work still concentrates on human and other mammalian cells. In fact, cells from fish to man have been utilized to produce IF, and an IF-like material has even been reported in plants. Many tissues such as lung, skin, kidney and cells of the reticulo-endothelial system produce this protein. In general, embryonic tissue and that of endoplastic origin have been shown to give lower levels of IF. Cells adhering to stationary bottles, slowly rotating prescription bottles, and cells in suspension are now used in the production of IF. In addition, many workers have concentrated on in vivo production.

To understand how interferon may be induced and how it works, one must first be aware of the five intracellular stages of viral infection: attachment of virus to the cell membrane; penetration, usually by a mechanism similar to phagocytosis; uncoating of the virion by cell enzymes; synthesis of viral components; and finally the release of new virus particles. The mixing of virus with IF does not inactivate the virus directly, nor does IF prevent the earliest stages of viral infection, for some early viral enzymes can be detected. Working with cell-free systems, researchers have been able to show that the protein synthesizing machinery of IF-treated cells can differentiate between viral, cellular and synthetic messengers, translating all but the viral messages into proteins.

From this property is derived one of the major differences between IF and the other immune system in the body, the antibodies: the former works intracellularly; the latter,

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extracellularly. In addition, IF appears much earlier in the course of viral infection and is non-specific, while antibodies are directed against a distinct stimulus. Once it has produced or is protected by IF, a cell or the body is refractory to the production of more IF.

Inducers Have Variation

The inducers of IF vary widely. Among the viruses, both DNA and RNA types as well as cytocidal and oncogenic strains have been employed experimentally. Both active virus and that inactivated by such agents as ultraviolet irradiation, can serve as inducers. In most studies inactive virus proved more effective, probably because of the virus' inability to cause vast cellular destruction. The fungal products of helenine and statolon have received widespread use and just recently were shown to contain viruses which could be the active component. Other micro-organisms utilized as inducers are the trachoma-inclusion conjunctivitis or TRIC agent; rickettsia; bacteria, especially gram-negative ones, living and killed; mycoplasma; and protozoa (Toxoplasma gondii). Non-viral inducers also include bacterial endotoxin, nucleic acids (animal, plant and synthetic), phytohemagglutinin, and pyran copolymers.

The facts that a number of different viruses produce the same IF in the same cell and that cellular inhibitors that do not retard viral growth can stop IF production indicate that it is coded by the host, rather than the viral genome. The early appearance of high molecular weight IF in vivo, as when statolon or endotoxin is used as the inducer, has led researchers to propose that some IF is preformed. However, this question remains unanswered.

Viral virulence and IF production bear an inverse relationhip, leading one to theorize that virulent viruses work quickly to turn off the cell's machinery and hence prevent IF production. Reduced levels of IF have been reported after treatment with steroids, x-rays, and certain carcinogens such as methylcholanthrene. Cold and trauma also have deleterious effects though no explanation for this phenomenon exists.

Although no virus mutant has appeared which is entirely resistant to IF, viruses do vary in their degree of sensitivity. IF has also been demonstrated to be an antiprotozoal substance, working against such organisms as toxoplasmosis or the plasmodia responsible for malaria.

In order for an agent to be utilized in treating man, it must be effective, non-pathogenic, non-toxic, and non-antigenic. Interferon seems to meet all these prerequisites and so has been tested for its therapeutic effectiveness. The use of IF to prevent local infections has been reported in animals and in man. Intranasal injections against influenza in mice and the prevention of vaccinial lesions in the rabbit's skin represent just a few of the therapeutic experiments in animals. The British Scientific Committee on IF (1962)[2] reported that 38 human volunteers who reacted normally to a vaccination at one site had depressed reactions at parallel sites treated with IF prepared in rhesus monkey kidney cells, a species close enough to man to allow cross reaction. An attempt to prevent the common cold through nose drops or spray failed in their hands, but may be attributed to the rapid elimination of IF by the nasal epithelium.[3] On the other hand, Soviet workers report the prevention of influenza replication in 157 volunteers.[4] The success was judged by the reduction of virus in throat washings and sera 14 days following viral inoculation and a decrease in antibody titers. In addition, no vaccination reactions were seen in the group receiving human IF, whereas chick IF had no such effect.

Correlations

Other researchers have correlated vaccination takes and viremia with IF's presence. A study in 15 men given yellow fever vaccinations showed that in 10, viremia was accompanied by a high IF titer; four had viremia and no IF, while one had neither. Viremia was present between the third and ninth day with a peak at about day 5; human IF peaked at day 6 but was detectable as early as day 4.

Antibodies on the other hand could not be seen until the tenth day.

As far back as 1803 Erasmus Darwin noted that cowpox failed to infect patients who had measles. "The contagion of the measles, if it be taken in sufficient time before inoculation so the eruption may commence before the variolous fever comes on, stops the progress of the smallpox in the inoculated wound and delays it until the measles fever has finished its career," he said. Today we attribute this phenomenon to IF, and in fact detectable levels of IF have been found in such patients.[5]

Systemic application has proven less successful. One attempt with administering IF to patients suffering from various serious diseases of suspected or recognized viral etiology gave rather inconclusive results as to its effectiveness yet did indicate that intravenous injections of impure IF can be tolerated by man, though most subjects experienced chill and malaise, probably due to leukocyte incompatibility.[6]

Animal work has proven more rewarding, probably because of the relatively smaller size of the recipient. Fifteen thousand units of IF given intramuscularly 20 hours before a lethal dose of Semliki Forest virus protected mice, but 5 thousand units did not. In addition, the subcutaneous route of administering IF proved less effective; I.V. route of inoculation was not mentioned. The time of inoculation was also important for IF was ineffective if given 48 hours before viral inoculation or after viral infection. Inoculations of IF have also been shown to retard the progress of Friend Leukemia virus. Workers in this field have detected decreased yields of virus following IF administration and suggest that the prevention of viral multiplication is probably responsible for the slower progression of the disease.[7]

These and other animal studies have indicated that the potency of the preparation, its route of inoculation, the organ reached, and the history of viral infection are important factors in evaluating IF. The potency seems to be very important, and if one can extrapolate from mouse to man, about 35 million units would be needed to treat a man of about 170 lbs. Hillemann of Merck and Company, Inc., has suggested 40 mg of pure IF, assuming 1 unit = .004 gamma, giving a total of 10 million units. The purest material so far, chick and mouse IFs, $2x10^6$ IF units/mg of protein. In the chick embryo-Eastern Equine Encephalitis Virus system, 1 unit or .004 gamma protects 10^5 cells. Even with these rough estimates one can see that IF's efficiency is much better than that of antibiotics of which .05 gamma/ml of penicillin or .2 gamma tetracycline is equivalent to one unit. Just one more bit of statistics: if the chick system can be exactly correlated with man and we assume no loss of activity through concentration, to protect a man would require 2000 embryonated eggs giving 20 liters of IF to be used for a single dose.[8]

Application Problems

The big problem with systemic application of IF is its rapid elimination from the body. In mice about 99% is cleared from the serum within an hour; hence very high doses are essential. Induction of endogenous IF seems therefore a more feasible approach to the therapy of viral infection. However, the actual amount produced by the body is probably in excess of that detected by standard techniques because of IF's adsorption onto cells as well as its rapid elimination.

In a 1 kg rabbit, following induction by Newcastle disease virus, 5 to 150 million units of IF were produced, according to the calculations of Ho and Postic,[9] but they admit the estimate is probably low. If this figure is applied to man, then many billions of units are possible.

Work with pregnant rabbits has helped to elucidate the transplacental distribution of IF, a prerequisite for giving an inducer to a pregnant patient for action against a virus likely to effect the fetus. 10^{10} infectious viral particles of NDV were given about a week before term. The levels of IF were tested at four and seven hours after viral inoculations. The results indicated that IF diffuses into the fetus but no evidence of fetal production has been found. Its disappearance from the fetus is rapid, but there is some suggestion that it may be possible to protect it by inducing IF in the mother.

In 1964, Wheelock and Dingle[10] administered six different viruses in succession to a patient with acute myelogenous leukemia. After the administration of each virus, a marked improvement in the patient's symptoms was noted with signs of remission. The number of myeloblasts in the peripheral circulation was sharply reduced, and a reduction in the size of the lymph nodes occurred. However, few blood samples contained IF. How nonspecific responses to injection might have affected the course of the disease cannot be evaluated.

Viral inducers of IF in man, however, are not regarded favorably. In addition the organisms are antigenic and therefore have only a limited usefulness. Hence the search for non-toxic, non-antigenic, yet effective IF inducers has taken many turns. A synthetic polysaccharide described by Merigan and Regelson[11] has the property of IF induction. This material while producing IF also has the adverse side effects of producing thrombocytopenia and cystoplasmic inclusions in leukocytes.

Use of Poly IC

More promising is the use of a synthetic ribonucleic acid, a complex of polyinosinic and polycytodylic homopolymers (Poly IC). Workers at the National Institutes of Health have shown that even after severe conjunctivitis has developed in the rabbit's eye because of herpes simplex infection, the synthetic nucleic acid can reverse the course of infection.[12] This datum is particularly interesting because of herpes' known insensitivity to IF. Poly IC has also been therapeutically effective when given to mice up to seventy-two hours after a usually lethal dose of viral pneumonia, though researchers are reticent to say whether its action is against the infected cell or by prevention of the extension of the already existing infection.

In addition, doses of 50-100 gamma proved to have a significant positive effect in the treatment of mice inoculated with Rausher leukemia virus. If the Poly IC was given forty-eight hours after the virus, the inoculated rabbits reacted as the controls did with enlarged spleens by eighteen days, detectable leukemia by thirty days, and death by seventy days. However, when IC was given two hours before the virus, only three out of fifteen were sick at the end of a month, some were alive at three months and four of fifteen showed no symptoms. No toxic side effects of IC inoculations were noted, but more recent communications report toxicity similar to that from bacterial endotoxin.

Further tests with other mammals have yielded negative results, suggesting that Poly IC's effectiveness may be limited to nonmammalian species *in vivo.*

Interesting Aspects

Another interesting aspect of the IF story is its production by normal and diseased leukocytes. In studies of lymphatic leukemia, victims of which show a reduced resistance to infection with fungi and bacteria and frequently get serious infections where normally none occurs, such as from measles and chicken pox, IF levels were consistently lower than usual whether or not the patient was undergoing therapy. Polycythemic patients also show reduced levels of IF, whereas in myeloid leukemia increased IF production has been detected.[12,13]

In summary, what can one say are the prospects for IF in man? From our studies with interferons of a number of species, we have found that through prolonged weekly injections, antibodies can be produced; hence it is antigenic. Yet rabbits, inoculated over a long period with rabbit IF, gave rise to no anti-IF antibodies. Hence one would have to use homologous IF for treatment or induce the body to make its own. IF, if available, would be particularly useful in cases of unknown viral etiology. If a disease is in progress, IF might prove useful to protect uninfected cells, especially in the case of rabid dog bites or vaccinia skin and eye lesions. IF might be effective in persistently infective systems, possibly by containment of the infection.

Interferon would also prove useful where immunization was impractical, in epidemics, or when immunization is risky such as in eczematous children. In chronically ill or cardiac patients who are susceptable to many viral agents and when active or passive immunization is not available or is ineffective, such as in prevention of fetal damage due to rubella, interferon might be the key.

Local infections such as skin lesions or upper respiratory infections may be easier to handle than generalized ones and at respiratory infections are particularly difficult to handle by immunization because of their numerous causative agents.

In the twelve years since its discovery much has been learned about IF and though much still remains unsolved about its action and production, researchers are making progress towards its application as a therapeutic and/or prophylactic agent.

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CANCER OF THE PROSTATE

Continued from page 3

10) Induced anaphylaxsis. Recent work suggests that therapy involving the immune mechanisms may be of value in the future.

Survival

Dr. Jewett found 33% of his patients alive and free of cancer fifteen years post radical prostatectomy for an isolated malignant nodule. This figure is significant as it represents more than twice the success with hormonal therapy in a comparable series.[4]

Summary

A review of carcinoma of the prostate has been presented. The importance of early diagnosis and aggressive treatment is emphasized. If we as physicians are going to conduct an active and effective campaign against this "silent man killer," we must adhere to the belief that rectal examinations must be routinely performed on all men over forty years of age.

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PATIENTS OF YESTERDAY

Patients may not swear, curse, get drunk, behave rudely or indecently on pain of expulsion after the first admonition. There shall be no card playing or dicing and such patients as are able shall assist in nursing others, washing and ironing linen and cleaning the rooms and such other services as the matron may require.

Regulations of the Philadelphia General Hospital, 1790.

Highlights

• We invite physicians to send in contributions to Highlights. Members of our Society are urged to send in abstracts of their presentations at recent meetings so that they may be published in the Journal.

REVERSIBLE CEREBRAL VASCULAR INSULT

Richard N. Harner, M.D., *Chief of Neurology and* Lorenzo G. Runk, M.D., *Assistant Neurologist, The Graduate Hospital of Pennsylvania — Fall Course, Delaware Academy of General Practice, November, 1969.*

It is convenient to divide reversible vascular disease into two groups. The first is cervicocranial atherosclerosis with associated cerebral ischemia. Pathogenesis of ischemia has been ascribed to several processes including embolization of cholesterol, platelet thrombi and subsequent embolization, and poor perfusion due to vascular narrowing.

The patient's response to such impairment of blood flow is primarily conditioned by the availability of collateral circulation. If adequate collaterals develop early, even major impairment of blood flow can be fully compensated. This explains patients with bilateral complete carotid artery occlusion who are still able to function normally. The widespread availability of collateral circulation means that most patients with vascular insult, whether acute or recurrent, will improve. Assessment of therapy must be viewed in this light since some improvement will take place in all patients with stroke, and one's therapy may not be responsible for the improvement of any single case.

Therapy for patients with cervical or cranial atherosclerosis is divided into two types: anti-coagulation and surgical relief of vascular obstruction. Recent cooperative nationwide studies have clearly demonstrated the value of anticoagulation in selected patients with intermittent symptoms, especially in those whose disease involves the vertebrobasilar circulation. Intermittent carotid artery insufficiency is probably also helped by anticoagulation, but acute strokes are not.

Endarterectomy has been widely utilized in years past but is now becoming restricted to patients whose disease is localized to a single offending vessel. These patients' symptoms may be alleviated with little additional risk by using techniques of vascular bypass combined with hypothermia.

The second large category of vascular insufficiency is that related to disease outside the cervical-cerebral vascular tree. Valvular heart disease, disturbances of protein metabolism, connective tissue disorders, pulmonary insufficiency, anemia, postural hypotension, cardiac arrhythmias, and myocardial infarction are often associated with reversible cerebral ischemia. This group is most important because, although the incidence of each of these medical disorders is low, the reward for their detection and treatment is high in terms of prevention of subsequent cerebral damage. In most instances therapy is directed at the primary medical disease itself. For example, in obstructive emphysema, the resultant hypoxia, hypercarbia, and increase in intracranial pressure often combine to produce neurological deficit due to impaired local blood flow. Adequate ventilation and treatment of underlying pulmonary infection can produce striking improvement in the patient's "stroke." Similarly, in hematologic disorders associated with hyperviscosity, plasmapheresis may result in striking improvement of cerebral blood flow and reduction of symptoms. Therefore it is imperative that we look for rare but treatable disorders which can be associated with vascular insufficiency in the brain.

It is important to emphasize that techniques used in the past to promote local improvement in cerebral blood flow are for the most part ineffective and may sometimes be harmful. Drugs such as papaverine have no local effect on cerebral vasodilatation. Carbon dioxide, which effectively dilates normal vessels, has no effect on vessels in an ischemic area, except perhaps to promote blood flow toward normal areas and away from the area of greatest need. Therefore, in the absence of specific therapeutic measures, best treatment involves avoidance of postural hypotension, maintenance of good ventilation, and prevention of cardio-pulmonary crises such as pulmonary embolism and aspiration pneumonia.

INDUSTRY IN THE TECHNOLOGY OF THE FUTURE

Charles B. McCoy, President, E. I. duPont de Nemours and Co., — *Symposium on Challenges Facing the Technology of Tomorrow, Newark State College, Union, N. J., September 1969.*

I would like to share with you some of my thoughts and concerns about trends that could have far-reaching consequences for industry, as well as for society.

Beyond the health of any one company or any single industry there lies a larger question that I would like to explore — the social impact of science and technology, and the implications of this to our technical organizations.

A few years ago, we published a booklet about our research activities that began with these words: "Research is one of those few areas of human endeavor which command a respect that sometimes seems to verge on reverence."

When we published these words, no one to my knowledge rose to challenge them. But today such sentiments would immediately engender a chorus of protest.

All of us are familiar with the negative argument. Science and technology are described as a wagon rolling downhill, out of control, carrying its human cargo to catastrophe. They are seen not as a solution to our problems but as the cause of many contemporary ills. Our air and water are polluted. Our inner cities are decaying. We are mucking up our planet, yet stand arrogantly poised to spread our contamination to the stars. If we are to stem our suicidal course, say the critics, we must hasten toward some form of social control of technology.

We may disagree with their conclusions, but we cannot dismiss what these people are saying. Their ranks include eminent and influential scientists, scholars and writers, and there is substance to their complaints.

After all, can we deny that some technological developments have been released on society without due regard for the side effects?

Must we not admit that there are in industry, just as in government, men who concern themselves primarily with what is technically feasible, rather than what is socially desirable?

Can we really quarrel with Biologist Barry Commoner's contention that, "The age of innocent faith in science and technology may be over"?

Dr. Lee A. DuBridge, President Nixon's science advisor, believes that, "The advance of science and technology, which has helped us to achieve many ideals, has also enhanced our determination to move on to the attainment of even higher ideals. As we eliminate one cause of human suffering, we yearn to eliminate them all, and we become ever more impatient with our slow progress — even though our rate of progress is indeed accelerating."

This is a classic case of what social scientists call the revolution of rising expectations.

We find ourselves frustrated by the fact that our ideals advance a great deal faster than our ability to keep up with them.

Surely, though, there is little to be gained by making technology an all-purpose scapegoat. As Harvey Brooks, Dean of Engineering and Applied Physics at Harvard, has observed, "Only a fabulously affluent society, such as ours, can indulge in the sentimental conceit of denigrating technology. . . Our choice is not between uncontrolled technological progress and abandonment of technology as a tool of human aspiration. Our problem is to discipline our mastery of Nature so that man can live in harmony both with Nature and with his own human nature. This means not less, but more and more sophisticated science and technology."

The challenge is for industry to devise more imaginative ways to place its technological resources in the service of man, to couple its business goals with the clear and pressing needs of society. As the principal agency for the advancement of technology — the agency performing two-thirds of the nation's research and development — industry has both an enormous opportunity and a responsibility in this regard.

I believe that most of us in this room can agree that there is nothing mutually exclusive about making a profit and serving the needs of society. But we surely have not convinced our kids of this. A great many young people seem to feel that the profit motive is to social consciousness what water is to oil — they just don't mix very well.

I have no doubt that the companies that will be the most profitable in the long run will be those that serve society best. Society will reward those that help unclog our highways, rebuild and revitalize our cities, cleanse our streams, and conquer poverty and disease, not those whose pursuit of the dollar blinds them to such needs.

We are now trying to match our resources with emerging human needs in a more systematic way, using a wider variety of forecasting and planning tools.

For example, one group in our organization is involved in a program we call "Needs of the Future." This is a team of resident students of society, students of business trends, and students of science and technology. Their mission is to look toward the year 2000, determine some of the important needs of society and suggest in what ways Du Pont can contribute to fulfilling these needs. Admittedly, this is an experimental approach. We hope it will give us more precise quantitative tools to guide research activities. I do not want to suggest for one moment that we have discovered a magic yardstick to help us do society's bidding; nor do I claim that we have gone as far as we should in rethinking our role in society, reordering our priorities, and reorganizing our structure to accommodate change.

In the last analysis, industry's ability to perform society's crucial tasks will depend most heavily upon the vision and the will of men who staff our organizations. We need men who combine knowledge of the techniques of science with a deep understanding of the needs of the society in which they live. Only such men can invent solutions that are technically sound and socially, economically and politically feasible. It will take nothing less to solve our massive problems in such areas as health, transportation and housing. Well-rounded men capable of tackling such problems are emerging from our colleges, but many of them are turning away from industry because they feel we have no place for them.

The call for generalists has become conventional wisdom — almost a cliché — but there is an open question about our effectiveness in answering that call. The call will be met only if industry lives up to its public pronouncements, places a premium on breadth, and provides in-house, or in cooperation with universities, opportunities for technical men to build both their broad-scale and specifically technical talents.

Our technology will not fail us if we demonstrate the collective will and wisdom to apply it to society's priority tasks.

MULTIPLE TRAUMATIC INJURIES — The Undiagnosed Injury

William E. DeMuth, Jr., M.D. — *Asst. Professor of Surgery, School of Medicine, University of Pennsylvania. Fall Course of the Delaware Academy of General Practice, WMC, September, 1969.*

All experienced surgeons who care for patients with trauma will remember instances of delay in making a diagnosis of injury soon enough after an accident. Most of these oversights occur in the seriously injured, and the consequences range from nothing of clinical importance to those which significantly add to morbidity or actually cost the patient his life. Serious or not, medicolegal action is far more likely to follow a missed injury, since negligence is usually implied.

As sophisticated diagnostic aids such as angiogrophy, isotope scanning and other procedures such as peritoneal aspiration and blood enzyme studies become available, the opportunities for diagnosis increase. If these aids are not employed, considerable criticism may result. The fact that some of them may not be too helpful or may even be dangerous to the patient compounds the problems in judgement concerning their use.

Thoracic Injuries

Several years ago we reviewed approximately 450 serious thoracic injuries encountered in a ten-year period. Of this group 17 were missed for significant periods of time after admission to the hospital. Figures 1A and 1B outline this experience.

Most surprising to us was the high mortality. Ten of 17 died, all but one due to the missed thoracic injury. Admittedly, many had a number of serious associated injuries, but the 60% mortality stands in sharp contrast to the usual mortality of 5-20% reported in recent years. From this dismal experience we were encouraged to note that the missed injury almost always was amenable to at least tentative diagnosis by simple, widely available techniques which could easily be applied in the future. Had chest x-rays and electrocardiograms been done on all of these patients, few of these injuries would have escaped detection. These and additional studies are now routine.

Suspicion of serious thoracic injury can usually be confirmed by inspection and examination of the patient. Tachypnea and anxiety usually are associated with the severe pathophysiologic changes associated with inadequate ventilation, whatever the cause. Subcutaneous emphysema, paradoxical chest wall motion and abnormal auscultatory findings often suggest the magnitude and side of injury. In our experience, two particular cardiovascular injuries — aortic rupture and myocardial injury — commonly escape detection by examination.

Aortic Rupture and Myocardial Injury

Aortic rupture, more than 90% just distal to the left subclavian artery, is usually found in victims of severe deceleration accidents. Widening of the superior mediastinum on chest x-ray is almost always present. At least the major portion of the hematoma is contained within the mediastinum, but rupture with left pleural hemothorax is compatible with life in many. Blood pressure drop will be commensurate with blood loss; in a patient with widening of the mediastinum who is in shock, a tentative diagnosis may be made if no other site of blood loss is detectable. We have successfully operated upon one such patient without benefit of angiography or extracorporeal circulation, both of which are highly desirable adjuncts if time permits their use.

Myocardial contusion has largely been overlooked as a serious injury. Its early consequences parallel those of myocardial infarction due to coronary artery occlusion, and properly treated, the outlook is good. The electrocardiogram usually shows changes, particularly of the ST segment, consistent with myocardial injury. If ECG is normal, a second tracing should be made after 24 hours. Electrocardiograms should be obtained on all thoracic injuries.

Chest Injuries

Specialists in traumatic injuries have long stressed the necessity of repeatedly examining the injured patient in the first days following injury. This is especially important in chest injuries. The physiological disruptions associated with major injuries of the cardiopulmonary system are likely to lead to rapid collapse and death, situations familiar to all thoracic surgeons. Simple diagnostic methods usually suffice if they are repeated at regular intervals. Our experience with a fatal delayed tension pneumothorax following an unimpressive initial chest roentgenogram emphasized to us the necessity of frequent reappraisal.

Pleural evacuation by needle or indwelling tube is a very valuable diagnostic tool as well as a method of treatment. A chest tube placed on water seal drainage affords a valuable means of detecting continuing blood loss or major air leak and avoids the serious consequences of reaccumulation of large amounts of air or blood. For this reason we insist that a tube be put in place in the patient with multiple injuries if pleural air or blood was thought to be worth evacuating in the first place.

Abdominal Injuries

Peritonitis and delayed recognition of significant blood loss account for most errors in diagnosis of intraperitoneal injuries. Continuing or intermittent hemorrhage from parenchymatous organs and delayed onset of peritonitis due to intestinal devitalization are the most common serious complications of abdominal traumatic injury.

Sudden collapse following rupture of a subcapsular splenic hematoma, well recognized throughout Asia as a complication of slight trauma to a spleen enlarged by malaria, occurs in about 20% of patients with splenic trauma. Mortality is increased about tenfold in these patients. Ruptured liver is less common but is a real possibility in those patients operated upon for hepatic injury, especially if extensive packing is used to control bleeding. When vital signs and hematocrit are monitored at frequent intervals, most cases will be diagnosed so long as suspicion of these types of injuries exists. Retroperitoneal hemorrhages secondary to rupture of pelvic vessels complicating pelvic fractures are especially deceptive. Here, especially in the aged, all abdominal signs may be absent. Hemorrhage due to renal injury is more readily diagnosed by urography, urinalysis and occasionally by angiography.

In recent years several relatively discarded diagnostic maneuvers have been resurrected or redeveloped.

Peritoneal Aspiration

Praised and damned by many who have tried the procedure and some who haven't, peritoneal aspiration continues to be useful. Initially employed to detect blood, it later was found useful in demonstrating bacteria and leukocytes (peritonitis) and amylase (pancreatic injuries) in peritoneal fluid. The important principle is the performance of four quadrant taps if contaminating fluid is not detected on one of the first three taps. A needle of adequate length and size (#18 guage at least) is an obvious requirement. I prefer the intraperitoneal insertion of a catheter under local anesthesia. Saline lavage is inspected for blood, bacteria, enzymes, etc. A retained catheter will allow repeated examinations at little risk to the patient.

The real value of the technique can only be speculated upon since it hasn't been used unless some suspicion of an intraperitoneal catastrophe is present. Its greatest usefulness is in the comatose patient in shock, but under no circumstances should a negative tap be considered to rule out injury. We know of one patient with a ruptured spleen who had a negative tap by an experienced surgeon, despite the fact that 3500 cc of blood was recovered at operation a short time later.

Special X-ray Studies

Instillation of radiopaque substances to detect peritoneal penetration is used in abdominal stab wounds to detect penetration of the parietal peritoneum. Thirty to fifty cc of 50% Hypaque or other appropriate contrast material is injected into a catheter stitched in the wound. AP and lateral views must be made.

Shaftan and others have criticized the concept of operating upon all patients having peritoneal penetration. They argue that few clinical mistakes will be made if the necessity for operation is individually determined. Conventional signs of blood loss, peritonitis, etc., are relied upon. This approach remains to be fully evaluated.

Abdominal Aortic Angiography

Freeark has reported a remarkable yield of unexpected findings from abdominal angiography. We have not performed this study as a screening manuever, but it would seem that in skilled hands it may be warranted if reasonable indications are present.

Scintiscanning

In 1967 Weaver and Boyle reported the first subcapsular hematoma of the spleen diagnosed preoperatively by photoscanning. We have made a single diagnosis by this means. The simplicity of the study recommends its use providing the indication for operation is not otherwise obvious. Tagging cells and scanning require an hour or more, and this must be considered in the critically injured patient. The principal indication is in a patient with questionable left upper quadrant signs of injury persisting for days after injury.

In both thoracic and abdominal inquiry, clinical experience will probably continue to be the most valuable asset in distinguishing between those injuries which will spontaneously resolve and those which require operation. Laboratory and roentgenographic examinations are valuable adjuncts, but in general, they form only part of the base upon which diagnosis is made. With increasing numbers of diagnostic tools available, there is a tendency to become increasingly dependent upon them. Angiography, isotope scanning and other modalities may aid the clinician, but most of these entail some risk if a surgical emergency exists, at least in lost time. They should therefore be chosen wisely and not used as a shotgun approach in every injured patient. There is no substitute for repeated careful examination of the patient with multiple injuries.

Figure 1A

Tabulation of injuries associated with 47 consecutive severe chest injuries.

Associated Injuries	Number
Fractures:	
Ribs	22
Other	20
Liver	5
Pancreas	2
Diaphragm	3
Spleen	3
Heart	3
Urinary Tract	4

Figure 1B

Tabulation of missed diagnoses of serious thoracic injuries encountered in a ten-year period. Note the 60% mortality. All but one died of the missed thoracic injury.

Diagnosis	Number	Deaths
Aortic Rupture	2	2
Heart Contusion	5	5*
Ruptured Diaphragm	2	—
Tension Pneumothorax	6	2
Infected Hemopneumothorax	1	1
Lung Contusion	1	—

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*One died of chronic nephritis.

WIDENING HORIZONS

Although the perfect history has never been taken by any physician, his careful, sympathetic, and discerning questions frequently yield information from the sick person which enlarges the doctor's horizon of knowledge and experience as well as presenting him with unexpected examples of the dramatic or bizarre.

David Seegal, *The Pharos of Alpha Omega Alpha,* 26:7, 1963.

PROCEEDINGS OF THE HOUSE OF DELEGATES, 1969

MEDICAL SOCIETY OF DELAWARE

The following Resolutions were considered at the Annual Meeting of the House of Delegates of the Medical Society of Delaware.

RESOLUTIONS

Resolution No. 1

Amendment to By-Laws regarding Membership.

Resolved by the House of Delegates of the Medical Society of Delaware:

1. That Article III, Section 2, Active Members of the By-Laws be deleted.
2. That a new Article III, Section 2, Active Members be inserted to read as follows:
   "Every physician duly licensed and registered in the State of Delaware to practice medicine in all its branches, who is of good moral character and professional standing and a member of his component society shall be eligible for active membership, provided, from whom or on whose behalf the required annual dues or special assessments have been received timely by the treasurer of the society."
3. That Article III, Section 3, Associate Members, Line 5 be amended as follows·
   . . ."in the practice of industrial medicine and physicians who are in the active practice of medicine in all its branches but who are not citizens of the United States."
4. That Article III, Section 4, Honorary Members, Line 3 be amended as follows:
   "been in good standing in this Society or other component societies for thirty"

Report of the Reference Committee

The Committee recommends the adoption of this resolution. The resolution was adopted.

Resolution No. 2

Amendment to By-Laws regarding Component Societies being subject to certain limitations.

Resolved by the House of Delegates of the Medical Society of Delaware:

1. That Article IV, Section 4, (c) (1) of the By-Laws be deleted.
2. That a new Article IV, Section 4, (c) (1) be inserted to read as follows:
   "a component society may admit to active membership or continue in such membership only such citizens of the United States as are licensed to practice medicine and surgery in all its branches in the State of Delaware."
3. That Article IV, Section 4, (c) (2) of the By-Laws be deleted.
4. That Article IV, Section 4, (c) (3) be changed to Section 4, (c) (2).
5. That Article IV, Section 4, (c) (4) be changed to Section 4, (c) (3).
6. That Article IV, Section 4, (c) (5) be changed to Section 4, (c) (4).
7. That Article IV, Section 5, Delegates and Councilors, (a) line 6 be amended as follows: "of the component society who are members of this Society. Regardless of the total"

Report of the Reference Committee

The Committee recommends the adoption of this resolution. The resolution was adopted.

Resolution No. 3

Amendment to By-Laws regarding Executive Officers.

Resolved by the House of Delegates of the Medical Society of Delaware:

1. That Article V, Executive Officers, Section 1 of the By-Laws be amended as follows:
   "The executive officers of this Society are the President, Vice President, President-Elect, Secretary, Treasurer, and Executive Director. The Executive Director shall be a member ex-officio without vote of all standing and special committees. Th Executive Director shall not be subject to the rules of qualification, election and tenure that apply to other officers within these By-Laws."

Report of the Reference Committee

The Committee recommends the adoption of this resolution. The resolution was adopted.

Resolution No. 4

Amendment to By-Laws regarding general powers of the Council.

Resolved by the House of Delegates of the Medical Society of Delaware:

That Article VII, Section 1, General Powers, lines 14 and 15 are amended by deleting the word "secretary" and inserting instead the word "director".

Report of the Reference Committee

The Committee recommends the adoption of this resolution. The resolution was adopted.

Resolution No. 5

Change in Annual Dues

Resolved by the House of Delegates of the Medical Society of Delaware:

> That Article III, Section 7, Dues and Special Assessments, line 5 of the By-Laws of the Medical Society of Delaware is amended by deleting the words "seventy-five dollars ($75)" and inserting instead the words "eighty-five dollars ($85)".

Report of the Reference Committee

The Committee recommends the adoption of this resolution. The resolution was adopted.

Resolution No. 6

Whereas the Medical Society of Delaware applauds the action of the Delaware Legislature in establishing the Delaware Institute of Medical Education and Research, created to increase the opportunities for young men and women of this state to study for careers in medicine and to increase the number of physicians practicing within the state;

Nonetheless, the Society sees certain pitfalls which it seeks to avoid, to wit

1. That young men and women resident of the State of Delaware pursuing pre-medical studies at colleges and universities outside of Delaware, or at institutions within the state other than the University of Delaware, may find entrance to the Jefferson Medical School rendered more difficult for them by virtue of a full quota of students entering Jefferson from the University of Delaware.
2. That such young men and women may even encounter increased difficulty in being admitted to medical schools other than Jefferson, inasmuch as a state-supported school will exist for Delaware students.

Further the Society, recognizing that physicians tend to practice in the state where they had residency training or internship training, fears that if young men and women from the State of Delaware who take pre-medical training (at no expense to the taxpayers of Delaware) outside of Delaware, tend to be scattered to medical schools distant from Delaware, the anticipated effect might be to decrease the number of such students who would ultimately practice inside Delaware.

For these reasons the Medical Society of Delaware is

Resolved that the Delaware Institute of Medical Education and Research be charged with the responsibility to develop a program or programs, with the Jefferson Medical College or with other institutions of formal medical education which would tend to help those students whose pre-medical education has not been at the University of Delaware to enter medical schools, to finance the costs of medical education and to obtain internship and residency training in or near the State of Delaware.

Public Laws Committee
Allston J. Morris, M.D., *Chairman*

Report of the Reference Committee

The Reference Committee recommends the adoption of this resolution. The resolution was not adopted.

Resolution No. 7

Whereas, There is ever increasing evidence linking cigarette smoking with serious diseases; and

Whereas, There is increasing public awareness of the dangers of cigarette smoking; and

Whereas, The American Medical Association should take a more active stand against cigarette smoking and cigarette advertising; and

Whereas, The Federal Communications Commission and the Federal Trade Commission have both attempted stronger action on cigarette smoking advertisements, however, certain members of the United States Congress continue to block these efforts; and

Whereas, The physician must play a leading role in preventive medicine; therefore be it

Resolved, That the House of Delegates of the Medical Society of Delaware encourage the Federal Trade Commission and the Federal Communications Commission in their efforts; and be it further

Resolved, That both Delaware Senators and Delaware Representative in the U. S. Congress be made known the stand of the medical profession on this problem; and be it further

Resolved, That the American Medical Association be requested to take a more vigorous active part in this problem.

New Castle County Delegation

Report of the Reference Committee

The Committee recommends the adoption of this resolution. The resolution was adopted.

Resolution No. 8

Whereas, certain insecticides have been proven harmful to fish, animal and plant life and that detergents have been instrumental in clogging sewage disposal plants, be it

Resolved, that all insecticides and detergents sold or distributed in the State of Delaware be approved by the State Board of Health.

Frank T. O'Brien, M.D.
Chairman, Environmental
and Public Health Committee

Report of the Reference Committee

The Committee recommends the adoption of this resolution. The resolution was adopted.

Resolution No. 9

Whereas, the Medical Society of Delaware wishes to encourage qualified students to obtain a medical education, and

Whereas, it is desirable to have more funds available for scholarships, and

Whereas, monies repaid with interest will increase the Scholarship Fund, and now therefore, be it

Resolved,

That the Medical Society of Delaware Scholarship Program be converted from a gift to a loan program, and

That these same funds be made available annually to students who are resident of the State of Delaware, and

That recipients be chosen on the same basis as at present, i.e., need and proper acceptance and standing at a recognized medical school, and

That rules and procedures for administering the fund be established by a Committee appointed by the President, submitted for approval to the Council of the Medical Society of Delaware, and

That this loan program be operational by June 1970.

Daniel J. Preston, M.D.
Past-President

Report of the Reference Committee

The Committee recommends the adoption of this resolution. The resolution was adopted.

Resolution No. 10

Whereas, the Medical Society of Delaware has funds available for loans to qualified medical students, and

Whereas, the Medical School Foundation is authorized to collect funds for medical education, now therefore, be it

Resolved, That funds designated by the Medical Society of Delaware for student loans be transferred to the Medical School Foundation for disbursement under the provisions of the rules and procedures established by the Medical Society of Delaware for administering its scholarship program.

Daniel J. Preston, M.D.
Past President

The Reference Committee rcommends the adoption of this resolution. The resolution was amended by replacing the words *Medical School Foundation* with *Delaware Academy of Medicine* and was then adopted.

At the business meeting on October 25, 1969, Rhoslyn J. Bishoff, M.D., was elected President-Elect of the Medical Society of Delaware. Resolutions 1 through 5 were given a second reading and formally adopted.

The following resolution was presented and adopted:

Whereas, the House of Representatives has dealt a serious blow to research and training programs in cardiology when it reduced the 1970 budget for the National Heart Institute by 6.5 million dollars below the figure for 1969, and

Whereas, the Heart Disease Control Program was cut 2.7 million dollars in the 1970 budget and the Regional Medical Program by 24 million dollars; therefore be it

Resolved, That we appeal to our Senators in Congress and express our concern over the recent cuts in funds available for heart disease research and training, to acquaint our concern to our Senators with a special appeal to Senator J. Caleb Boggs who is on the Sub-Committee for Health Appropriations, and to hope that our Senators will take appropriate action to insure continued funds for cardiovascular research and training. The Society feels that this economy cut will be detrimental to public health and will slow the progress of the fight against heart disease. We wish to impress our Senators with the urgency of an increase in appropriations as heart disease research and teaching must not be allowed to deteriorate.

Charles Levy, M.D.

Alfred R. Shands, Jr., M.D., was the recipient of the Distinguished Service Award given annually by the Medical Society of Delaware in recognition of outstanding service and substantial contributions to medicine in the State of Delaware.

The complete report of the Proceedings of the House of Delegates is on file in the Medical Society office and is available to members for reference.

TO FEEL IS TO WEEP

One cannot be deeply responsive to the world without being saddened very often. —

Dr. Eric Fromm

Letters to the Editor

To the Editor:

This letter is written in response to an article written by Dr. Henri Wendel for the July, 1969 issue of the Delaware Medical Journal regarding the residency program for family practitioners. I hope you will pardon my use of a cliché, but after reading this article, I do not know "who is trying to pull the wool over whose eyes."

There are several points raised by Dr. Wendel which I think deserve considerable thought if the "specialty" of General or Family Practice is to exist. He mentions several postgraduate courses of study such as sociology, psychology, computer logistics, and other courses of study which would be intended to enhance the physician's total perspective of family life and hence family practice.

I do not agree with this concept in relation to the doctorate degree or the fact that the new physician who has not developed sociological and psychological concepts after eight years of combined graduate and undergraduate training will achieve these concepts via undergraduate courses at the University of Delaware. Postgraduate courses in these areas will do nothing more than satisfy a curriculum. The idea of two or possibly three years of postgraduate training for "family medicine" specialties approaches the ridiculous as already proven by the failures of general practice residencies previously proposed and tried.

To me the basic problems lie, not in the orientation and training of the postgraduate physician, but in the curricula of the medical school. I recently attended a postgraduate session at the University of Virginia. There the director of medical education described numerous changes in the curricula which pointed toward specialization in the second year; medical students were electing their special areas of interest and pursuing them through the second, third and fourth years. After a rather lengthy discussion of the curriculum, questions were asked regarding a future curriculum for Family Practice. The commentator raised his hands above his head in a gesture of hopelessness and said, "I just don't know." This comment was direct evidence of the illogical processes operating within medical schools and proof that the time and effort of the Departments of General Practice will be wasted if changes are not made in the basic medical education curricula.

The possibility and probability of the resident physician assuming the continuing care of the clinic patients following completion of his residency is certainly not much incentive to enter this type of residency program. I am certain all of us feel a need to support medically the indigent, but the fact remains that a physician after his residency will not be able to assume financially the continuing care of the clinic or indigent patients.

Last but not least is the most discouraging fact: there are numerous hospital policies and regulations which increase in frequency at an alarming rate and which progressively discourage the generalist already in practice as well as young graduate students considering general practice. For, in truth, after three years of gynecology, obstetrics and pediatric studies as well as computer logistics, the generalist will still be considered a generalist and will still lack the qualifications and certification which will enable him to perform procedures which he performed for three years as a resident.

Hospitals, hospital administrators, chiefs of staff, and department heads will have to start looking at each physician as an individual and granting him privileges based on his medical knowledge, technical prowess, and innate ability before interest, enthusiasm and creativity are restored to the image of general practice.

The problems which I have mentioned in this letter are but one facet of the decision to enter or to remain in general practice. I sincerely hope that the Department of General Practice will not be influenced to believe that adding several more years of training, with a smattering of this or that specialty, will do much to enhance the image of family practice for doctors. The AAGP is undoubtedly attempting to establish a rise in status preference for general or family physicians, but the recommended course of action is to prolong their training through addition of a conglomerate of clinical and nonclinical entities.

It is about time physicians in the area who are "calling the shots" stop beating the drum for this type of postgraduate program and commence contemplation of a curriculum which will create a better undergraduate as well as graduate student's concept of family practice.

The survival of Family Practice is dependent on several decisions that the general practitioner will have to make over the next several years. The individual, and not his years in postgraduate training, should warrant priority in any further decisions. I sincerely believe that decisions based on the individual will encourage more physicians to enter general practice.

MARK S. HURM, M.D.

To the Editor:

Thank you for your editorial on the need for family planning in the November Journal.

We are terribly proud of the job being done by our physicians and staff in Delaware. A recent survey made by the Office for Economic Opportunity estimates that we are meeting the needs of 37% of all medically indigent women of childbearing age in Delaware. If true, this means 63% are not being helped, so we must work even harder.

Being admittedly biased, we also believe that family planning is terribly important and so do the 7100 patients we will serve this year.

May I take this opportunity to publicly thank the wonderful physicians who have given of their precious time and skill in the past and who are doing so today to make Planned Parenthood a reality for thousands of women.

R. W. NORRIS
Executive Director,
Delaware League for
Planned Parenthood, Inc.

IF A DOCTOR IS SICK . . .

To be ill, or to undergo an operation, is to be initiated into the mystery of nursing, and to learn the comforts and discomforts of an invalid's life; the unearthly fragrance of tea at daybreak, the disappointment of rice-pudding when you thought it was going to be orange-jelly, and the behaviour of each constituent part of the bedclothes. You know, henceforth, how many hours are in a sleepless night; and what unclean fancies will not let us alone when we are ill; and how illness may blunt anxiety and fear, so that the patient is dull, but not unhappy or worried; and how we cling to life, not from terror of death, nor with any clear desire for the remainder of life, but by nature, not by logic. In brief, you learn from your own case many facts which are not in text-books and lectures: and your patients, in the years to come, will say that they prefer you to the other doctor, because you seem to understand exactly how they feel. I wish you therefore, young man, early in your career, a serious illness, or an operation, or both. For thus, and thus alone, may you complete your medical education, and crown your learning with the pure gold of experience.

Stephen Paget, *Confessio Medici,* Ch. 7.

Deaths

DR. LAWRENCE D. PHILLIPS

Dr. Lawrence D. Phillips, 77, died on November 5, 1969, after a short illness. Dr. Phillips was former superintendent of the Emily P. Bissell Hospital.

Dr. Phillips was a native of Ohio. He received his education at West Virginia University and the University of Maryland School of Medicine, where he received his M.D. in 1919. He interned at the Jersey City Medical Center, and later served with the Veterans Bureau and as an insurance company examiner. Dr. Phillips then came to Wilmington to organize the Delaware State Board of Health's Chest Clinics.

He was a member of many professional societies in his field, as well as of the local medical societies. He was a veteran of World War I and a member of the Rotary Club.

Dr. Phillips is survived by his widow, Mrs. Josephine Boyer Phillips, a son, Lawrence M., and a daughter, Miss Patricia Ann, all of Wilmington.

DR. HAROLD LOVE SPRINGER

Dr. Harold Love Springer, 88, died on November 11, 1969, after a long illness. Dr. Springer established his practice here, his home town, in 1904, after receiving his M.D. from the University of Pennsylvania in 1902, and spending two years' internship at the Presbyterian Hospital in Philadelphia.

He was particularly known for his early work in organizing clinics to combat cancer and tuberculosis. He helped start the first cancer clinic in the state. He also worked with the late Emily Bissell to start the Christmas Seal project in Wilmington; this later became a national movement. He was influential in establishing the State Tuberculosis Commission and the Emily P. Bissell Hospital.

He was Chief Surgeon at the Delaware Hospital and the Delaware State Hospital. In World War I he was a Medical Advisory Board Member and served in other advisory military capacities. In World War II he was a Senior Surgeon in the Public Health Service.

Dr. Springer had many interests outside his many medical activities. He was a charter member of the Delaware Swedish Colonial Society, a member of the Wilmington Club and the Wilmington Country Club, the Rose Tree Fox Hunting Club, and the Racquet and University Club of Philadelphia.

His wife, the former Carolyn W. Lobdell of Wilmington, died last year. They had four children, Harold L. Jr., William L., John Willard (deceased), and Mrs. Lawrence O'Neal, all of Wilmington. He is also survived by seven grandchildren and three great-grandchildren.

DR. JOHN ROSCOE ELLIOTT

Dr. John Roscoe Elliot, age 83, died in Laurel, Delaware on December 2, 1969. He was a native of Laurel, who had retired in 1965 after fifty-three years as a surgeon and general practitioner.

Dr. Elliott graduated from Western Maryland College in 1905, and then went to the Johns Hopkins University where he received his M.D. in 1909. He then spent two years in internship and one year as assistant superintendent at Rhode Island Hospital, Providence, Rhode Island, before returning to Laurel to enter practice.

Dr. Elliott served in France in World War I, but returned to Laurel and his practice in 1919. He was a past president of the Sussex County Medical Society, and the Medical Society of Delaware, and Chief of Staff at Milford Memorial Hospital for many years. He was also president of the Peoples National Bank for thirty years and a past president of the Laurel Rotary Club.

He is survived by his widow, Mrs. Flossie Elliott, four sons, John R. Jr., Dr. Joseph A., and Jackson T. Elliott, of Laurel, and James Elliott of Suitland, Maryland; a stepson, Wade H. Minter of Seaford; two stepdaughters, Mrs. Jean Wright of Laurel and Mrs. Kay Clendaniel of Lincoln, and nine grandchildren.

President's Page

DELIVERY OF HEALTH CARE

I recognize the need for change from our traditional methods in Health Care Delivery in Delaware. To further my program of encouraging innovative activities by the Society for the "Betterment of Public Health," I plan to bring all facets of health planning together, explore areas wherein voids exist and seek ways to overcome these deficiencies.

Practicing physician leadership and expertise in organization and development of new techniques are our responsibility, and we must demonstrate now our concerns. Physicians who are going to deliver the care should have a major role in planning how it is going to be delivered; and those individuals in administrative positions must, through our direction, find ways to effectively implement the plans.

How much quality of medical care can we afford? Even with improved efficiency and physician productivity, the rapidly increasing costs of medical and health services are becoming critical. The economic leverage of the consumers looking for quality and excellence, with a high percentage of them having some kind of prepayment plan, encourages the development of new systems. HEW Secretary Robert Finch urges a breakout from hospital-oriented services and more extensive use than ever before of non-hospital care institutions and services. HEW Undersecretary John G. Veneman further emphasizes the need to develop alternatives to inpatient care: ambulatory care, neighborhood health centers, preventive rather than curative medicine. These activities should come from the private sector of medical practice. Roger O. Egeberg, M.D., in examining the health care delivery system of the future, states that individual practice by physicians will continue, even if it proves to be an inefficient method. Financing up to now has resulted in the encouragement of hospital care rather than the development of alternatives. Physicians need more responsibility and activity in these fiscal matters. The actual cost of a clinic visit without a professional fee component at the Wilmington Medical Center is currently twice the total fee a family physician charges in his office. Efforts must be made to improve organization, costs, and delivery of health services centered on inclusive family-oriented comprehensive health centers. Debate exists concerning the nature of group association, not the advisability of group association.

The health manpower-shortage crisis cannot be solved in the foreseeable future. Changes in the delivery system with more widespread and efficient use of paramedical personnel such as nurse practitioners, physician assistants, etc., have much to offer as answers to the crisis. Training programs need wider development; and problems involved with certification, licensing, limits of career opportunity, and economic rewards must be attacked.

The Medical Society of Delaware has formed a committee to coordinate our activities and to pursue these objectives of practicing physician leadership, interest in fiscal controls and costs, development of new systems, and solutions to the health manpower shortage. Herbert M. Baganz, M.D., has been appointed chairman for the new Health Care Delivery Committee.

Henry H Stroud

Editorials

THE GOAL: ELIMINATION OF A PREVENTABLE CONGENITAL DEFECT, ERYTHROBLASTOSIS FETALIS

Although the etiology of erythroblastosis fetalis due to Rh iso-immunization was determined only 30 years ago, it is now thought possible to eliminate this serious disorder of the fetus and newborn within the next 20 to 25 years.

Hydrops fetalis (the most serious clinical manifestation of erythroblastosis) was described as early as 400 B.C., but the criteria for diagnosis — anemia, edema, splenomegaly, hepatomegaly, and changes in the placenta — were not established until 1892. Kernicterus was not proven to be the result of hyperbilirubinemia until 1950. Hydrops fetalis, icterus gravis neonatorum, and anemia were recognized as manifestations of erythroblastosis fetalis in 1912.

In 1939, Levine and Stetser postulated the cause of the disease as the "Rh factor", and described the pathogenesis of erythroblastosis fetalis. During the next few years the Rh factor was identified, the antibodies were demonstrated repeatedly in the mother's serum, and various methods of treatment were utilized.

Before the exchange transfusion, first performed in 1946, 45% of Rh sensitized pregnancies terminated in death of the fetus. Preterm delivery and exchange transfusions introduced in 1954 reduced prenatal mortality to 22% and also reduced the number of stillborn infants. Spectro-photometric examination of amniotic fluid to predict the severity of erythroblastosis and early delivery, based on these studies, further lowered mortality to 10%. Intra-uterine transfusion introduced in 1963 promises to further lower mortality, but there are very serious cases in which intra-uterine transfusion offers no hope.

Prevention of Rh iso-immunization with anti-Rh immune globulin (RhoGAM-Ortho) should reduce mortality to an irreducible minimum within the next few years. This preventive measure became feasible when in 1957 fetal erythrocytes were demonstrated in the maternal circulation by a differential staining technique. Most studies have incriminated delivery with separation of the placenta as the time when fetal erythrocytes invade the maternal circulation. In 1960 attempts to prevent sensitization by immunization with Rh antibody were begun.

Successful prevention of maternal sensitization to the Rh factor by the administration of an anti-RHO(D) preparation after delivery, was reported in 1965. Well-controlled clinical studies have proven this method successful, and in 1968 world-wide distribution of anti-Rh globulin (RhoGAM) was federally approved. The use of RhoGAM post-partum is now considered an indicated public health measure.

RhoGAM has been used throughout Delaware for the past 1½ years within three days of delivery of an Rh-positive infant by a non-sensitized Rh-negative mother and at the termination of pregnancy by abortion. In general, utilization of RhoGAM has been quite appropriate, but in a few instances it has not been administered when indicated for various reasons: Patient refusal, inadequate study of infant and mother, and cost to the patient.

In the interest of eliminating a preventable congenital defect, the National Foundation, with the encouragement of the Medical Society of Delaware, has agreed to reimburse hospitals for the cost of RhoGAM administered to the patients who cannot pay for it (either personally or through a third party plan) for the six-month period from January 1, through June 30, 1970. Hospital administrators may bill National Foundation at 701 Shipley Street, Wilmington, Delaware, 19801, when they can certify the patient is unable to pay for the globulin and there is no insurance plan to assist.

It is believed that by July 1, 1970, public health policies will permit reimbursement to hospitals for the cost of RhoGAM, by the State Board of Health, and the National Foundation may use its funds for other programs aimed at elimination of congenital defects.

It should be our goal to eliminate erythroblastosis due to Rh sensitization, by assuring the use of RhoGAM in every case where it is indicated.

Henry H. Stroud, M.D.

THE VANISHING AMERICAN: THE G.P.

Dr. Mark Hurm speaks with emotion in a letter on page 18 of this issue regarding his feelings about the programs in process for a "new look" for general practice. We wish that we did not share his pessimism about the success of the present planning. But like him, we believe it is mostly locking-the-barn-door-after-the-horse-has-gone. And like him, we think the fault lies in large part with the medical schools, and also with the demonstrable role or lack thereof of the general practitioner in the teaching hospital.

There are many times when we wonder just who it is who will be taking care of the colds, aches, indigestions, and headaches that make up the bulk of day to day patients' problems ten years from now. We do not share the same concern regarding care for patients with ruptured cerebral aneurysms or disseminated lupus or acute tubular necrosis or leukemia. Nor do we think that the development of physicians' aides, no matter how broad the scope of their duties, can be more than a partial solution to the problem of supplying primary physicians.

For the cold facts are frightening. In the past thirty years, while the physician population of the U.S. has increased from 150,000 to 237,000, in the same period of time the number of general practitioners has decreased from 120,000 to 85,000.

True, there has been a great increase in the numbers of pediatricians and internists during this same period. But the latest statistics show that more than a quarter of all internists now limit their practices to a subspecialty, and this is probably a growing trend as is the trend to pediatric neurology, pediatric hematology, etc.

The shortage of the primary physician (equals the family doctor equals the generalist equals the certified general practice specialist equals your certified friendly family internist equals the general practitioner) is bound to continue. For he (or she) is beginning to follow the extinction pattern of the devoted family servant: Everybody wants one, everybody laments his disappearance from the American scene, but nobody wants to be one.

Solutions, anyone?

B.Z.P.

READ ANY GOOD BOOKS LATELY?

Book reviews are not a regular part of our publishing for one reason only: we don't get any offered to us. We would be very happy to afford space for book reviews of any book with medical implications. This is a very broad category indeed. *Portnoy's Complaint*, for example, is nothing more than what Mr. Portnoy had to say to his psychoanalyst.

We therefore add book reviews to the list of suitable material which we solicit: letters, case reports, *Highlights* of recent presentations, *Special Reports* of meetings attended, etc., etc. Happiness is a warm manuscript.

B.Z.P.

TO LIGATE OR TO TIE

I would never use a long word, ever, where a short one would answer the purpose. I know there are professors in this country who "ligate" arteries. Other surgeons only tie them, and it stops the bleeding just as well.

Oliver Wendell Holmes, Medical Essays, "Scholastic and Bedside Teaching"

Delaware Academy of General Practice

NEW CORE CONTENT REVIEW

The Connecticut and Ohio Academies of General Practice will offer a new, completely revised Core Content Review educational project in 1970. This is the third year that the two chapters are presenting this self-testing postgraduate educational program, which allows a physician to check his own knowledge of the Core Content of Family Medicine as defined by AAGP.

The Core Content Review will comprise five examinations of eighty questions each, which will be mailed monthly to participants starting on March 15, 1970. Two weeks after receiving the test questions, each participant will receive a complete set of answers with detailed explanations and reference sources. Once all five reviews have been completed, participants will receive a bonus sixth review, which will be a composite of questions selected from the original five tests. This will serve as a final review of the key areas of family practice. The Postgraduate Medical Institutes' Core Content Review Faculty has prepared over 500 original test questions to insure a new-look for the 1970 review.

Rather than complete the review in six successive months, there will be a hiatus during the summer months. Therefore, the initial three monthly reviews will be held during March, April and May and the three concluding installments in September, October and November.

A special bonus of five progressive diagnosis cases is being arranged for the summer, which will allow the participants to complete this phase of the review at their leisure. In these cases, the participating doctor will be asked to answer questions based on history and other clinical findings provided by the questioner. Each time the participant answers a question, the faculty member will outline how the patient reacted to the particular course of treatment. At the conclusion of the case, the participating physician will be able to see how effective his management of the case was.

The format, style and content of the 1970 project has been based in great part on the evaluations and recommendations of Academy members from about 30 states who answered a detailed survey upon completing the 1969 review. As an example, 81% of the respondents found 80 questions per review to be approximately the correct length, while 85% found the 1969 review to be highly relevant to family practice. 76% rated both the progressive diagnosis cases and the overall review either very good or excellent.

There will be no grading of the Core Content Review except by the individual participating physician. A request for 18 prescribed hours of credit has been submitted to AAGP. Registration fee for the review is $30.00 for members and $40.00 for non-members. Physicians interested in participating in the Review must register by February 27, 1970. Checks made out to the Core Content Review should be sent to: The Core Content Review, Connecticut and Ohio Academies of General Practice, 4075 North High Street, Columbus, Ohio 43214.

MALTHUS ON FOOD AND PASSION

I think I may fairly make two postulata.

First, That food is necessary to the existence of man.

Secondly, That the passion between the sexes is necessary, and will remain nearly in its present state.

Thomas Malthus (1766-1834), *An Essay on the Principle of Population* (1798), Ch. I.

In Brief

Speakers on "Ask the Doctor"

Speakers for February, 1970 on the Tuesday radio program, (11:05 a.m. WDEL) produced by the Medical Society of Delaware are: February 3, Jason Campbell, M.D., *How Do I Get a Doctor?*; February 10, Harold P. Sortman, M.D., *Household Pets and Related Diseases in Humans;* February 17, Robert W. Frelick, M.D., *Cancer Chemotherapy;* February 24, Louis Centrella, M.D., *Obesity.*

In the News

Henri F. Wendel, M.D., has been appointed to the Committee on Clinical Investigation and reappointed to the Commission on Environmental Medicine of the American Academy of General Practice for a one-year term.

Alfred R. Shands, Jr., M.D., medical director emeritus of the Alfred I. duPont Institute, was elected to the board of directors of the National Easter Seal Society for Crippled Children and Adults during the society's annual convention in Columbus, Ohio.

Frank Gilday, M.D., has been elected secretary of the Mid-Atlantic region of the American Association for Clinical Immunology and Allergy.

Albert L. Ingram, Jr., M.D. is now Secretary of Health and Social Services in Governor Russell W. Peterson's cabinet. Dr. Ingram will continue as Commissioner of Mental Health until he is replaced.

Relative Value Studies

The new edition of the *Relative Value Studies,* published by the California Medical Association will become effective for usage April 1, 1970. It is designed to assist doctors, health insurance carriers, consumers and business to identify procedures which physicians perform. Furthermore, the edition serves as a guide to understanding the basis for charges.

Smoking Booklet

How 88,648 Heavy Smokers Stopped Smoking has just been published by the Anti-Tobacco Center of America. The booklet explains how 88,648 heavy smokers (of whom many are European physicians) have stopped smoking without straining their will power. This booklet is available free of charge to smokers. To obtain it send your name and address to The Anti-Tobacco Center of America, Department 1-E, 276 Park Avenue South, New York City.

Accreditation for Visiting Nurse Association

The Visiting Nurse Association of Wilmington, Inc., has been granted full accreditation by the National League for Nursing, New York. The American Public Health Association is a co-sponsor of the program. The Visiting Nurse Association of Wilmington, Inc., is one of the first 51 community nursing services in the nation to receive full accreditation from the League since it was introduced in 1968.

Health Examination Survey

The Public Health Service's Health Examination Survey, authorized by Congress in 1956, will be installed in Sussex County, Delaware and Worcester County, Maryland early in March 1970 to examine a sample of the teen-aged population (ages 12 through 17 years). The Survey will be conducted in the Health Survey's mobile examination center during the period March 5 through March 31, 1970. This will be a part of a series of examinations of a nationwide health survey of some 8,000 youngsters. Purpose of the examinations is to collect statistical information on a uniform basis on various aspects of the health of the youngsters and to obtain data on certain physical and physiological measurements relating to growth and development in this age group. The process will include a special examination by a physician of the eyes, ears, nose and throat, heart and neuromuscular systems; a dental examination by a dentist; a test of visual acuity and color vision; recordings of blood pressure; biological and biochemical tests of a blood sample; an audiometric test for hearing performed in a soundproof room; an x-ray of the chest for cardiovascular and pulmonary abnormalities; a 10-lead electrocardiogram and phonocardiogram of the heart; a time vital capacity test using a wedge spirometer; an exercise tolerance test under a measured workload using a treadmill; a gripstrength test; recordings of height, weight, and various other measurements of growth and development; and measurements of verbal, perceptual, and social skills by a psychologist. No part of the results of the examination, except for a card stating the blood type, will be disclosed to the youth or his parents. A report of relevant findings will be sent to the youngster's physician and dentist when the parents request that this be done.

CLINICAL NOTICES AND MEETINGS

Memorial Scholarship

Applications are now being accepted for the E. V. Allen Memorial Scholarships, open to junior and senior medical students attending medical schools in the United States or Canada. The scholarship provides three months of cardiovascular study at the Mayo Clinic, Rochester, as well as a $1,000 award. Deadline for applications is April 1, 1970. Applicants will be notified by May 1, 1970. For brochures write to Minnesota Heart Association, 4701 West 77th Street, Edina, Minnesota 55435.

Medical Education

The 66th Annual Congress on Medical Education sponsored by the council on medical education of the AAA will be held at the Palmer House in Chicago, February 8-9, 1970.

DDib Workshop

A Workshop on Diabetes Detection will be held February 16 at the Sheraton-Dallas Hotel, Dallas, Texas. The Workshop, second in a series presenting the "hows" of conducting a diabetes detection program at the community level, will be sponsored by the Disease Detection Information Bureau of Chicago. Preregistration is required; information and registration materials are available from DDib, 3553 West Peterson Avenue, Chicago 60645.

**PG Courses
A. A. of Allergy**

The American Academy of Allergy will present a two-day Postgraduate Course in connection with its 26th Annual Meeting, February 14-18, 1970, to be held at the Jung Hotel in New Orleans, Louisiana. Pulmonary Diseases and Asthma, Developments in Medicine Relating to Allergy, Clinical Immunology and Organ Transplantation will be featured subjects. For information write: The American Academy of Allergy Executive Office, 756 North Milwaukee Street, Milwaukee, Wisconsin 53202.

ACP Courses

The American College of Physicians announces the following courses: Practical Approach to Selected Medical Problems, January 26-29, Ochsner Foundation Hospital, New Orleans, Louisiana; Cardiovascular and Renal Disease: Pathophysiology and Pharmacology, March 9-13, Presbyterian-St. Luke's Hospital, Chicago, Illinois; Neurology and the Internist, March 23-26, Mayo Clinic and Mayo Graduate School of Medicine, Rochester, Minnesota; Gastroenterology for Clinical Teachers, February 23-27, University of Michigan Medical Center, Ann Arbor; Clinical Concepts in Infectious Disease: Manifestations and Management, March 2-4, University of Florida College of Medicine, Gainesville; For further information write: Edward C. Rosenow, Jr., M.D., Executive Director, American College of Physicians, 4200 Pine Street, Philadelphia, Pennsylvania 19104.

Cardiovascular Session

The American College of Cardiology will hold its 19th Annual Scientific Session February 25-March 1, 1970 in New Orleans, Louisiana. All sessions will be held at The Rivergate Center. For information write: William D. Nelligan, Executive Director, American College of Cardiology, 9650 Rockville Pike, Bethesda, Maryland 20014.

N. J. Society of Anesthesiologists

The 11th Annual Postgraduate Anesthesia Seminar, will be held at the Cherry Hill Inn, Cherry Hill, New Jersey on March 7, 1970. Hospital internes and residents in Anesthesiology will be admitted without registration fee. There will be a registration fee of $14.00, which includes luncheon, for non-members of the New Jersey State Society of Anesthesiologists.

Tuberculosis Today

The National Communicable Disease Center, Atlanta, Georgia, will offer a new course, Tuberculosis Today eight times during 1970 — January 12-16, March 2-6, April 6-10, June 15-19, July 27-31, September 21-25, October 26-30, and December 7-11. Enrollment information and application forms can be obtained from State Health Departments or from the Tuberculosis Branch, National Communicable Disease Center, Atlanta, Georgia.

Training Program

Comprehensive Planning for Health will be presented by Health Sciences Extension, University of California, and Division of Public Health and Medical Administration, School of Public Health, University of California, Berkeley, March 16 - April 3. For further information write: Health Sciences Extension, University of California, Berkeley, California 94720.

Psychiatry Program

The Ninth Colloquium sponsored by the American Psychiatric Association will be held March 13-15 at the Sheraton Motor Inn in Portland, Oregon. Registration fee is $50. For information write: American Psychiatric Association, 1700 Eighteenth Street N.W., Washington, D.C. 20009.

American College of Surgeons

The Eastern Sectional Meeting of the American College of Surgeons will be in Washington, D.C., March 16-18, 1970 at the Sheraton Park Hotel. This is the annual combined meeting for surgeons and nurses. In addition to general surgery sessions, there will be programs in seven specialties: gynecology-obstetrics, neurosurgery, ophthalmology, otolaryngology, plastic surgery and urology.

Annual Scientific Meeting

The American Fertility Society announces its Third Postgraduate Course in conjunction with the Annual Scientific Meeting to be held at the Washington - Hilton Hotel, Washington, D.C., March 18-20. Certificates will be awarded upon completion of the course. Registration fee will be $75.00 total (including meals). For additional information contact: Herbert H. Thomas, M.D., Secretary, The American Fertility Society, 944 South 18th Street, Birmingham, Alabama 35205.

Rural Health Conference

The 23rd National Conference on Rural Health will be held April 9-10, 1970 at the Pfister Hotel and Tower, Milwaukee, Wisconsin. For information write: Council on Rural Health, American Medical Association, 535 North Dearborn Street, Chicago, Illinois 60610.

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

SAFE TESTING FOR PREGNANCY

An important alarm regarding the possible danger of hormone pregnancy tests was recently sounded.[1]

"In a recent review of adverse effects of diagnostic drugs (Vol. 11, p. 49, June 13, 1969), The Medical Letter cautioned against the use of estrogen-progestin combinations or progestins alone as a test for pregnancy because of possible harm to the fetus. Among the hormonal preparations used in such tests are Delalutin (Squibb), Deluteval 2X (Squibb), Pro-Duosterone (Roussel), Provera (Upjohn), and Gestest (Squibb). In women who are not pregnant, the daily administration of these preparations over a period of two to five days produces uterine bleeding one to 15 days after the last test dose. False positive reactions (bleeding) are infrequent, but false negative reactions occur in about five per cent of pregnant women.

In a study by I. Gal et al *(Nature, 216:83 1967)* on 100 women who had given birth to babies with meningomyelocele or hydrocephalus, it was found that 19 had received oral hormone tablets for the diagnosis of pregnancy. In a control group of 100 mothers of normal babies, only four had been given a hormonal test for pregnancy; no appreciable differences were found between the two groups with respect to any other drug taken in the first trimester. Despite previous belief to the contrary, the evidence that hormone pregnancy tests in women who are pregnant will induce virilization of the female fetus is not convincing; more studies are needed to determine whether there is a causal association between other developmental anomalies and administration of hormones early in pregnancy.

Since women who may be pregnant should take as few drugs as possible, and since several rapid and reliable biologic and immunologic tests for pregnancy are available (Medical Letter, Vol. 7, p. 31, 1965), most Medical Letter consultants see no need for hormone pregnancy tests. Of the biologic tests, the rat ovarian hyperemic test and the Friedman rabbit test are almost 100 per cent accurate; the rat test has the advantage of being more rapid (12 to 24 hours). Of the immunologic tests, the urinary chorionic gonadotropin (UCG) test (Wampole) and the Pregnosticon Tube Test (Organon) are at least as accurate as the biologic tests and possibly more accurate than the slide tests (Gravindex, and others). If there is a psychological benefit to the patient in producing vaginal bleeding to prove that she is not pregnant, induction of bleeding by hormone administration should be deferred until a negative biologic or immunologic test makes it reasonably certain that the woman is not in fact pregnant."

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[1] *Medical Letter Vol. 11, No. 21 (Issue 281) Oct. 17, 1969.*

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THE FORUM

Environment And Health

ALGAE AND ENVIRONMENTAL HEALTH

SHANKHA K. BANERJI, Ph.D.

The increase in population and the rapid development of agriculture and industry have caused a severe strain on water resources of this country. More and more cities are finding a lack of good sources of water supplies, either because of poor planning in the past or because of pollution by sewage and industrial wastes.

Algae have been used by the environmental engineers to treat economically waste waters from domestic sources and from some industries under controlled conditions. Thus, many thousands of taxpayers' dollars have been saved by use of algae waste-stabilization ponds for waste treatment in preference to conventional biological treatment processes such as trickling filters or activated sludge processes.

On the other hand, the presence of increased amounts of algae in water supply sources — lakes, streams, etc. — has caused numerous problems in water treatment and recreational activities. Some of the most common problems caused by algae in water supplies are taste and odor imparted to water, clogging of sand filters used for water purification, corrosion of metal and concrete structures, and coloration. There also have been instances where algae-produced toxins in their drinking water have caused the loss of life of wild and domestic animals.

Many recreational lakes and streams have become unusable because of algal blooms. These algal blooms have been usually attributed to sewage, industrial waste water discharges and agricultural drainage. Fertilization of these water bodies has gone far beyond tolerable limits causing this ecological imbalance.

Much research needs to be done to determine the benefits of algae to man, and also ways to control excessive algal blooms. Investigators in the Environmental Engineering group of the Civil Engineering Department at the University of Delaware have been conducting research on algal growth for sometime. They have been studying the effect of toxic chemicals such as borates, chromates, zinc, and nickel ions on algal cultures developed in the laboratory. Increased use of borates in detergents has raised the possibility of higher levels of boron in the sewage. Chromates, zinc, and nickel ions are found in many industrial waste waters and may find their way into the algae waste stabilization ponds treating such wastes. The results of this study will show what levels of these chemicals can be tolerated in an algal waste stabilization pond and what kind of growth response the algae will have at different doses of these chemicals. It is expected that these results will allow forecasts of optimal discharge concentration of these substances in various industrial and chemical wastes.

Dr. Banerji is Assistant Professor of the Department of Civil Engineering at the University of Delaware.

This page is sponsored by the Delaware Tuberculosis and Health Society

MEMO

FROM THE DESK OF **autocopi**

To All Physicians

date JANUARY, 1970

Subject

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Delaware
Medical Journal

FEBRUARY, 1970
VOLUME 42
NUMBER 2

STREPTOCOCCAL PHARYNGITIS

Part I — Correlation of Cultures with Clinical Criteria

• Since the beta hemolytic streptococcus is the only bacterial pathogen firmly established as a cause of acute pharyngitis, its exclusion by throat culture excludes the need for antibiotic therapy but except in scarlet fever, there are no satisfactory clinical criteria to distinguish streptococcal from non-streptococcal pharyngitis. The data presented indicate that the presence of certain physical symptoms make upper respiratory infection of beta hemolytic streptococcal etiology unlikely.

Martin F. Randolph, M.D.
John J. Redys, B.S.
Evelyn W. Hibbard, B.S.

Antibiotics are rarely indicated in the therapy of pharyngitis and a throat culture negative for the beta hemolytic streptococcus.[1-3] Neither mycoplasma nor bacteria other than group A beta hemolytic streptococci have been firmly established as a cause of pharyngitis in children.[3,4] Moreover, antibiotics directed against pathogens other than beta hemolytic streptococci in children with pharyngitis have been found not to influence the course of illness nor the development of complications.[1-3]

For completeness one must include *C. diphtheria* as a cause of pharyngitis. But in this day diphtheria has been taken care of by universal immunization. Thus for all practical purposes in otherwise well children presenting with a sore throat, if one can exclude the streptococcus, one can exclude the need for antibiotics.[1-4] Of course, the mere isolation of the group A streptococcal organism in the throat culture of a child with a sore throat does not establish streptococcal pharyngitis; the child may be a carrier.[3-5] Unfortunately, except in scarlet fever, there is no sign or group of signs that will distinguish streptococcal pharyngitis from pharyngitis due to other agents, presumably viruses.[5]

Within the limitations imposed by office practice, the physician crudely distinguishes streptococcal pharyngitis from viral pharyngitis with superimposed streptococcus by care-

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Martin F. Randolph, M.D., F.A.A.P., F.A.A.A.S., is a practicing pediatrician in Danbury, Connecticut and is associated with the Departments of Pediatrics and Epidemiology, Yale University School of Medicine: John Redys is Supervising Microbiologist, Connecticut State Department of Health; Evelyn D. Hibbard is Assistant Director, Division of Laboratories, Connecticut State Department of Health.

This paper was presented at the Infectious Disease Symposium, Wilmington Medical Center, May 1969.

Table I

NUMBER OF STREPTOCOCCAL THROAT CULTURES HANDLED BY CONNECTICUT STATE DEPARTMENT OF HEALTH			
Year	Total in Thousands	% Beta Streptococcus	% Group A Streptococcus
1960	24.3	28.31	20.9
1961	40.9	23.46	18.54
1962	59.0	27.73	22.39
1963	88.4	30.51	25.72
1964	116.4	28.76	25.13
1965	143.2	24.8	21.17
1966	188.7	27.9	22.37
1967	212.4	26.57	22.62
1968	222.1	25.47	20.86

ful attention to physical findings, a knowledge of epidemiologic events, and, ultimately, by response to antibiotics within 24 hours.

In practice, the throat culture serves many purposes in separating streptococcal from non-streptococcal pharyngitis. It identifies the child with streptococcal infection for individual and for family follow-up; it serves to delineate the usefulness of antibiotics and thus reduce the cost of medical care; it educates the patient and the family that the majority of upper respiratory infections are due to viruses and need no specific therapy.[1-5]

To physicians who continually inquire of me, "Why do you bother with throat cultures?" I say that the throat culture and the telephone call to the parent early the next morning informing them that the culture is "negative for strep" are the best prophylaxis against further calls that the child still isn't well or still is coughing. The parent now knows what to expect with a viral illness and has been spared the expense and the child spared the possible harm of unnecessary therapy. It's enlightening that, when first in practice, I was often told, "Doctor, my child has a sore throat; I'm bringing him down for a shot of penicillin." This has now changed to, "Doctor, my child has a sore throat, and his nose is not runny; he needs a throat swab."

Throat culture with immediate plating on 5% sheep blood agar separates streptococcal from non-streptococcal pharyngitis with an efficiency of approximately 95%.[6] But despite its simplicity and value, this procedure enjoys less than universal use by the physician in practice. This is true for one of two reasons: Some physicians believe the diagnosis of streptococcal pharyngitis can be made by clinical signs alone with reasonable accuracy; others object to the cost of the throat culture in the private or hospital laboratory. (Parenthetically, the cost of a throat culture is often less than the cost of a course of penicillin.) Many physicians are able to use a state or community streptococcal service for confirmation of their pharyngeal cultures. (In Delaware the Delaware Heart Association sponsors the Streptococcal Laboratory of the Infectious Disease Research Laboratory, and group A streptococcal identification is available to all physicians without cost.)

The number of throat cultures taken by physicians in practice is on the rapid rise. (Table I)[2,7] On the surface, this is encouraging, for this means that children with streptococcal infection for the most part are being singled out for individual and, perhaps, family follow-up. It also means that physicians are now thinking of pharyngitis in terms of streptococcal vs. non-streptococcal etiology. How-

TABLE II

NUMERICAL PHARYNGITIS RATING SYSTEM

SIGNS THAT MAKE STREPTOCOCCAL ETIOLOGY PROBABLE (GROUP A) AND DOUBTFUL (GROUP B)

Group A	Positive Point Value	Group B	Negative Point Value
Red Throat	4-7	Frequent Cough	10
Nasal Speech without Mucoid Rhinnorhea	4-7	Mucoid Rhinnorhea	10
Tender Anterior Cervical Nodes	5	Hoarseness	7
Exudative Tonsillitis	6	Tender Post Cervical Nodes	7
Petechiae of the Palate	9	Injection of Conjunctivae	7
Excoriated Nares	9	Photophobia	7
Scarlet Fever Rash	10		
	Total		Total

Final Score
10 Streptococcal Etiology Unlikely
10-20 Streptococcal Etiology Possible
20 Streptococcal Etiology Probable

ever, the results of a questionnaire revealing that the majority of physicians are not willing to wait one or two days for bacteriologic confirmation are discouraging. Ninety-five per cent of physicians prescribe antibiotics before the results of the throat culture are known.[2] Moreover, 34% keep their patients on therapy after the throat culture is known to be negative for streptococci.[2] In my opinion, this represents a great abuse of penicillin.

Less than one-third of the cultures reaching the state laboratories are positive for streptococci.[2,7] To a certain extent this may represent the dilution effect of taking cultures on family contacts or the taking of cultures merely to exclude beta hemolytic streptococci. However, there are probably a large number of cultures taken needlessly without suitable application of clinical criteria.[2-6]

A streptococcal service might request physicians to (1) be more selective in the use of the throat culture, (2) wait for confirmation of a streptococcal etiology before initiating penicillin therapy, and (3) prescribe ten days of penicillin therapy only to those with streptococcal pharyngitis. In like manner, the physician, in consideration of parent pressure, might request of the laboratory rapid (24 hours) identification of beta hemolytic streptococci.

The physician in practice sometimes considers a state or community streptococcal service as less than ideal for three reasons: (1) There is a lack of the opportunity to correlate bacterial and clinical findings that one enjoys with the hospital laboratory; (2) There is the delay as short as 48 hours or as long as three or four days if a holiday or a weekend or the physician's day off intervenes; and finally, (3) Conflicting evidence regarding the efficacy of dry swabs in mailing kits has fostered some reservations regarding the use of this type of service.[7]

The following study was carried out in my private practice in cooperation with the Connecticut State Division of Laboratories. The study was designed jointly with Evelyn Hibbard, Acting Director of the Division of Laboratories, and John Redys, Supervising Microbiologist for the State Streptococcal Laboratories.

The first part of the paper will discuss the

Table III

SIGNS AND SYMPTOMS OF PHARYNGITIS

	Non-Streptococcal Pharyngitis (253 Patients)		Streptococcal Pharyngitis (178 Patients)	
	Number of Patients	% of Patients	Number of Patients	% of Patients
Red Throat	101	40%	178	100%
Tender Anterior Cervical Adenopathy	76	30%	96	54%
Nasal Speech without Mucoid Rhinnorhea	22	20%	160	90%
Exudative Tonsillitis	30	12%	45	24%
Petechiae of Palate	5	2%	18	10%
Scarlet Fever Rash	0	0%	9	5%
Excoriated Nares	0	0%	18	10%

correlation of positive cultures with clinical criteria for streptococcal pharyngitis as defined by an Apgar-type rating (1-10), which could be used by physicians requesting throat cultures. Subsequent parts of this paper will discuss (1) a comparison of results of immediate (office) and delayed (state) culture plating methods and the feasibility of identifying group A streptococcus by the fluorescent antibody technique using smears made directly from the throat swab in the physician's office, and (2) the recurrence rates following therapy with penicillin* or with 7-chlorolincomycin (Clindamycin**-Upjohn) and the possible role of L forms in recurrences.

Method

The study began October 30, 1968. Children were included in the study if they had an upper respiratory infection and if they had not taken antibiotics in the past two weeks. Most patients with profuse rhinnorhea or frequent cough were excluded. Children were admitted to one of three categories based on clinical impression. Clinical impression, however, was graded numerically. Each accepted clinical criterion of streptococcal pharyngitis was given a positive point value or Apgar-type rating. Negative values were given to the following signs or symptoms: cough, mucoid-rhinnorhea, hoarseness, or tender posterior cervical nodes. (Table II) The numerical values assigned to these criteria were derived from clinical experience with the method.

It will be noted that the first three criteria in group A are subjective, and the following four quite objective. In addition, all criteria with the exception of scarlet fever rash and perhaps excoriation of the nares are common to both viral and streptococcal sore throat.[3,4] Criteria in group B on the other hand are less subjective but are rarely if ever seen in the streptococcal sore throat.[3-6] The group B criteria clearly can render a decision between streptococcal and non-streptococcal pharyngitis; the negative point values can thus be decisive in the final score. This fact is illustrated in Table III where we see that no single criterion distinguishes streptococcal from non-streptococcal sore throat except scarlet fever rash and perhaps excoriated nares.

Children were admitted to one of three categories: Category O, streptococcal infection unlikely, total points fewer than 10; Cate-

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* Phenoxymethyl Penicillin (V-cillin K — Lilly)
** Cleocin HCl

TABLE IV

CLINICAL VARIATION BY AGE GROUP IN STREPTOCOCCAL PHARYNGITIS

Infant (3 Months to 1 Year)

Irritable but not acutely ill
Irregular low-grade fever
Serous nasal discharge
Excoriated nares
Response to penicillin dramatic

Child (1 Year to 4 Years)

Fever, vomiting, abdominal pain
Nasal speech without mucoid rhinnorhea
Characteristic breath odor
Post-nasal "glary" mucoid discharge
Diffusely red throat
Pain when mouth is opened
Otitis media-common
Enlarged, tender, anterior cervical glands, usually asymmetric

School Age

[Acute Onset: Fever (90%) Headache (50%) Systemic and Local Signs Decrease after 24 Hours]
Red throat-diffuse, moderate to very red
Red tongue with enlarged papillae
Red soft palate; coated tongue
Pain with swallowing
Exudate on tonsils or pharynx (20%)
Tender or enlarged cervical glands
Fever and signs disappear after third day

gory I, streptococcal infection possible, total points 10-20; Category II, streptococcal infection probable, point rating greater than 20. Table II lists the accepted signs and symptoms for and against streptococcal pharyngitis.[3-6] Patients were examined, and their signs and symptoms, category and total point value written on their culture plates. Other important data written on the child's blood agar plate included age and the day after onset of illness the culture was taken.

Table IV shows that the infant with streptococcal illness presents differently from the pre-school and school-aged child. Irritability, profuse muco-serous nasal discharge and impetigenous lesions on the nares are perhaps the chief signs of streptococcal infection in the infant. The pre-school child is acutely ill with thick nasal speech without mucoid rhinnorhea, a characteristic breath odor, and enlarged tender anterior cervical nodes, usually asymetrically enlarged. Typically, the preschool child does not complain of a sore throat but does complain of pain when the mouth is opened. Exudate on the tonsil is quite common; otitis media is very common.[4,6]

The school-aged child is acutely ill in the first 24 hours with fever, headache, and often abdominal pain. (Table IV) On the second day he feels better; but it hurts to swallow, the tongue is coated with red papillae and the throat is diffusely red. Acute cervical glands are tender at the angle, but not necessarily enlarged. Tonsillar exudate is present in about 20% of cases.[4,6] Suppurative complications are far less frequent in this age group than in the infant or pre-school child.

The duration of illness when the child is seen is a most important consideration. A child seen on the first day is not likely to show any physical signs; these are more likely to appear on the second or third day and then begin to recede with or without treatment. On the other hand, if a child has a viral pharyngitis with the streptococcus superimposed, ie, a carrier state, then the criteria we term negative, ie, rhinnorhea, cough or hoarseness, may appear on the second or third day. The day of illness can thus be decisive in our total rating.

Cultures for the identification of group A streptococcus were performed in my office and also submitted to the Connecticut State Division Department of Health Laboratories. Details of the methods will be discussed in the next section of this paper. Group A streptococcus identified in either laboratory was considered as significant.

RESULTS

Clinical Impressions as a Basis for Predicting Streptococcal Infection

A total of 430 children aged one year to sixteen years were admitted to the study; 244

Table V

PREDICTABILITY OF STREPTOCOCCAL INFECTION FROM CLINICAL IMPRESSION IN 430 CASES ON WHICH CULTURES WERE DONE

	Streptococcal Infection		
Colonies of Hemolytic Streptococci on Culture	Unlikely Category 0 Rating < 10	Possible Category I Rating 10-20	Probable Category II Rating > 20
Not Found	89 (64%)	82 (52%)	15 (11%)
Few	29 (21%)	23 (14%)	7 (5%)
Moderate	9 (6%)	13 (9%)	50 (38%)
Many	13 (9%)	40 (25%	60 (46%)
Total	140	158	132

cultures were positive for beta hemolytic streptococci. It will be noted (Table V) that the 430 patients were apportioned nearly equally into each of the three categories O, I, and II. Pre-school and school-aged children of both sexes were about equally represented in all three categories. Of the 140 patients not regarded as having streptococcal disease (Category O), 89 were negative by culture. This would imply a 64% accuracy for this category. If one were to regard all 29 patients yielding but a few streptococci by culture as carriers (21%), the accuracy would rise sharply to 85%. Unfortunately, a 21% carrier rate is not realistic.

Aside from the equivocal 29 patients in Category O, it would be well to bear in mind the 15% of the patients not suspected of streptococcal infection who on culture showed a moderate number to many colonies of hemolytic streptococci. At best, the predictability rate for this group may be of the order of 70%. Predictability was even less accurate in Category I (possible streptococcal infection) in that approximately 50% of these patients were positive by culture. The most accurate rate was achieved in Category II where 89% of the patients were positive by culture. If one considers all three groups combined, the accuracy approaches 70 to 75% and supports the findings of Breese and Disney.[8]

Discussion

It has become a cliché that streptococcal pharyngitis can be predicted 70% of the time by clinical signs alone.[5,6,8] The physician in practice wants to know how safely can one *exclude* streptococcal pharyngitis, when should one take a throat culture, when can a child safely leave the office without a "shot" or without a prescription for penicillin.

Using the criteria set forth earlier, we were able to exclude streptococcal pharyngitis 64% of the time and confirm it 89% of the time. However, the practicing physician, if we can judge by the percentage of positive cultures reaching the Connnecticut State Laboratories, is diagnosing streptococcal pharyngitis accurately less than 30% of the time. Clearly, this accuracy can be doubled by the routine appli-

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FACTORS ASSOCIATED WITH PHYSICIANS' VOTE ON THE WILMINGTON HOSPITAL MERGER

• This article looks at those physicians who voted for or against merger and attempts to show that these positions are related to such things as their age, the hospital they utilize, and their feelings towards administration and change.

John H. McGrath, Ph.D.
Robert A. Rothman, Ph.D.
Allan M. Schwartzbaum, Ph.D.

In June, 1968, a sociological study of the attitudes of physicians utilizing the Wilmington Medical Center was undertaken. Data for this research were gathered by a mailed questionnaire distributed to all physicians on the Wilmington Medical Center mailing list. Preliminary findings from the study were reported in a recent issue of the *Delaware Medical Journal.*[1] In this earlier article we reported such things as the subject's vote on the merging of three Wilmington hospitals and their attitude towards some of the changes subsequent to the merger. We also reported that any conclusions drawn from the data were speculative and more systematic analyses would be forthcoming. This paper presents further refinement of these data and specifically delineates sociological profiles of the respondents who reported that they voted "for" or "'against" the merger.

Merger—industrial, governmental, or medical — is an ongoing process. There are periods of time when certain people argue for and against merger, a time of actual voting, and the aftermath when old opinions may be reinforced or new opinions formed as to the utility and advantages of merger. The arguments for merger generally revolve around such things as improved services, lessened costs and the like. The arguments against merger either dispute the "facts" put forth by the proponents or stem from some interest in maintaining the advantages of pre-merger arrangements. Also, there is the possibility that some people would support the merger because they perceive change per se as beneficial while others resist such innovations because they view change as unproductive and dysfunctional.

In the questionnaire utilized in this study, we did not directly concern ourselves with the various "specific" reasons as to why a respondent did or did not approve of the merger. We did, however, suggest in the previous report that one might find sociological patterning within the pro-merger and anti-merger subgroups. For example, we hypothesized that people who had established certain practices within the system, such as one who has long practiced in one hospital, would be in-

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[1] A. M. Schwartzbaum, R. A. Rothman and J. H. McGrath, "The Reactions of Physicians to Merging of Wilmington Hospitals: An Initial Report." *The Delaware Medical Journal,* April 1969.

The authors are members of the Sociology Department, University of Delaware.

Table 1

Indicators of Localism and Their Association with Merger Vote

	Merger Vote				
	For Merger		Opposed to Merger		
Indicators	(# respondents)	%	(#)	%	
Born in Delaware	(22)	54	(19)	46	$X^2=6.39$, $p < .02$*
Born Elsewhere	(127)	75	(42)	25	
Spent Pre-College Years in Delaware	(31)	55	(25)	45	$X^2=4.1$, $p < .05$
Spent Elsewhere	(119)	77	(36)	33	
Attended University of Delaware	(17)	53	(15)	47	$X^2=4.81$, $p < .05$
Attended Elsewhere	(129)	74	(45)	26	
Served on Medical Committee or Boards Prior to 1965	(77)	67	(38)	33	$X^2=2.29$, $p < .20$
Did Not Serve	(28)	86	(6)	14	
Belong to Civics Clubs	(79)	68	(39)	32	$X^2=2.17$, $p < .20$
Do Not Belong	(71)	77	(21)	23	

* *For the reader not trained in statistics,* $p < .02$ *or* $p < .05$ *indicates that the probability (p) of the proportional differences within the table happening by chance is only two or five times in one hundred comparisons. In the social sciences an occurrence that can happen by chance five times or less in one hundred events is considered to be a highly significant statistical finding.*

clined to vote against any plan that would alter such practices.

The questionnaire used in this study was issued in June of 1968, three years after merger was officially sanctioned. This paper reports only on those respondents who said they voted "for" (a total of 154 physicians) or "against" (65 physicians) the merger at the time a vote was actually taken.[2]

Localism and Age

In the previous report we suggested that the total sample contained a large group of "locals," people who have been working and living in Delaware for a long time. We speculated that persons long involved in the Wilmington medical system would have some stake in maintaining the system as structured prior to merger. We hypothesized that these respondents would have voted "no" on the question of merger and, indeed, when we compiled our preliminary tables it appeared that we were correct. Table 1 shows that those who were born in Delaware were more likely to be opposed to merger than those born elsewhere; those who had spent their pre-college years in Delaware were more opposed; those who had attended the University of Delaware were more opposed; those who belonged to local civic clubs were more opposed; and those who served on local medical committees or boards prior to 1965 were more opposed. We also found that those with twenty or more years practice in the local area and those out of

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[2] Two hundred sixty-five physicians answered the question, "How did you vote on the question of the merger?" Twenty-six said they did not vote, two claimed they were not offered a vote and eighteen were not practicing in the area when the vote was taken. The totals in the tables of this article will vary from these figures because some respondents answered certain questions while leaving others unanswered.

TABLE 2

Age and Vote on Merger (%)

Vote	30-39	40-49	50-59	60+
For Merger	79	78	71	54
Opposed	21	22	29	46
(Total Subjects)	(29)	(85)	(55)	(41)
	X^2=8.95, $p<.05$			

medical school thirty or more years were more opposed. Though not an indicator of localism it was found that general practitioners were more opposed than all other groups of physicians.

There is, however, a mediating factor, age, which was found to be statistically related to these findings. As indicated in Table 2, the age of a respondent makes a significant difference in relation to his vote on merger. If one were to collapse the age categories into less than fifty years and fifty plus years, he would find that 22 per cent of the former and 37 per cent of the latter subgroups oppose the merger.

A re-examination of the previously listed findings on localism, controlling for the respondent's age, showed that age is correlated with every one of these factors. Even our finding on general practitioners is affected as sixty-two per cent of the general practitioners are fifty or older vis á vis forty-three per cent of all the other specialists.[3] Those few correlations which do not completely disappear when the age variable is introduced are found only in the 50 year and older group and are listed in Table 3.

The data in Table 3 seem to indicate that a cumulative effect takes place once a sample member reaches fifty. Not only is he more likely to oppose the merger based on age alone, but if he is from Delaware, his opposition to merger increases. This trend complements the theoretical notion that the longer a man is involved in one system, the more likely he is to acquire a vested interest in the maintenance of that system.

If the latter point is of importance in analyzing the merger vote, we should expect to find merger opposition among those members who indicated that merger had greatly changed their routine in some way. It is assumed that the longer a man performs a task in a certain way, the more reluctant he is to change the procedure. For instance, one question asked of the respondents was, "What has been the over-all effect of the merger on you as an individual practicing physician?" A larger proportion (39%) of the respondents who said merger had a "significant effect" indicated opposition to merger than those (22%) who said merger had a "moderate" or "no effect."[4]

We do not know, however, what the respondent is referring to when he answers such a question. Perhaps a more concrete indication of change in routine is the subject's utilization of hospitals. In one part of the ques-

TABLE 3

Difference on Merger Vote Within the 50+ Age Group

		Proportion Opposed to Merger (%)		
Where Born:	Delaware	57	X^2=5.16	$p<.025$
	Other	30		
Pre-College Years Spent:	In Delaware	50	X^2=3.95	$p<.05$
	Elsewhere	28		

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[3] This age difference is statistically significant X^2=4.201 D.F., $p<.05$

[4] The statistical difference between these proportions is X^2=2.22 $p<.20$.

Table 4

Physicians Grouped by the Hospital Primarily Used Prior to the Merger and Their Vote on Merger (%)

Merger Vote	Delaware	Memorial	General
For Merger	80	50	70
Opposed	20	50	30
(Number of Respondents)	(98)	(44)	(54)

$x^2=12.80$ $p<.01$

Table 5

Question Which Reflect Respondents' Attitude Toward Administrators (%)

"How well do you feel hospital administrators understand the problems that doctors have?"

Merger Vote:	Little or No Understanding	Considerable or Complete Understanding	
For	61%	83%	$X^2=11.75$
Against	39	17	$p<.005$
(Total Subjects)	(118)	(96)	

"How well do hospital administrators handle the administrative side of their job...?"

Merger Vote:	Poorly or not Well at all	Fairly to Extremely Well	
For	61%	77%	$X^2=4.37$
Against	39	23	$p<.05$
(Total Subjects)	(138)	(62)	

"How well do hospital administrators handle the interpersonal side of their jobs...?"

Merger Vote:	Poorly or not Well at all	Fairly to Extremely Well	
For	62%	80%	$X^2=7.25$
Against	38	20	$p<.01$
(Total Subjects)	(105)	(104)	

tionnaire we asked the respondent to rank (1, 2 and 3) the "Divisions of the Wilmington Medical Center in terms of patient utilization (all services) by *your* patients." The respondents were asked to indicate their ranking for two time periods, prior to merger and the questionnaire date three years after the initiation of merger. Utilizing these data we were able to arrange the respondents into groups of those whose primary patient utilization had not changed at all and those who had experienced some change. Contrary to our expectations, there is little voting difference between the groups who had or had not experienced change in hospital utilization. Thirty per cent of the "no change group," as contrasted with 28 per cent of the "change group," claimed to have opposed the merger.

TABLE 6

Questions Which Reflect the Respondents' attitude Towards Local Planning Issues (%)

". . . Concerning expansion of local medical facilities, please indicate which of the three alternative plans you personally favor."

Merger Vote:	Favor Concentration of Local Medical Facilities	Favor Decentralization of Local Medical Facilities	
For	74	56	$X^2=4.01$
Against	26	44	$p < .05$
(Total Subjects)	(135)	(41)	

"Delaware hospitals should be geared to 7-day, 24 hour, full-time operations."

Merger Vote:	Agree	Disagree	
For	73	50	$X^2=4.44$
Against	27	50	$p < .05$
(Total Subjects)	(183)	(24)	

This may mean that opposition to the merger does not stem from contemplated change in patient utilization of the various hospitals. Put another way, the fact that patient utilization might change because of merger may be a "plus" if the change means the physician can more efficiently use his time.

Another possibility, in terms of factors predisposing to resistance to merger, is a physician's preference for utilization of one hospital over another. By combining how the physicians said their patients utilized the various hospitals prior to the merger, we were able to, in turn, code the physicians as primarily using one hospital more than another. Table 4 shows how the three hospital-based groups voted on merger.

The data in Table 4 seem to indicate that there was more opposition prior to merger in the group who utilized Memorial Division. The reason for this apparent merger opposition within one group of physicians cannot be brought forth through the type of general questions utilized in the questionnaire. Within the informal knowledge system of the respondents, however, the reason or reasons are probably quite well known. A logical next step in our research would be to interview the physicians involved to clarify this finding. Only the people involved can really explain the nature of their opposition to the merger. Also, these figures do not change by re-coding the physicians on the basis of patient utilization after the merger. By re-coding we found that twenty-two per cent of the Delaware, forty-seven per cent of Memorial, and thirty-one per cent of the Wilmington General subsamples say they were opposed to the merger.

A person's age and preference for pre-merger arrangements seem to be important as indicated in the previous tables. Another approach to understanding the patterning of merger vote would be one of association or agreement in attitudes on certain issues. That is, we would expect those expressing pro-management or administration attitudes to be more favorable to the merger because merger was first proposed by key administrative personnel. There were several questions in this study that should indicate one's attitude towards administrators. An array of these is presented in Table 5.

It is fairly clear in this table that having a favorable attitude towards the way administrators do things is related to the group vote on merger. Approximately thirty-nine per

Table 7

Respondents' Perception of Change in Services After Merger in Relations to the Proportion for Voting for the Merger

Impact of Merger On:	# Perceiving Improvement	Proportion Voting for the Merger	# Perceiving a Decline	Proportion Voting for the Merger	Statistical Significance of Proportional Differences
Overall quality of patient care	31	100%	84	54%	$X^2=22.59$ $p<.005$
Availability of specialized equipment services in the community	47	81	15	40	$X^2=9.56$ $p<.01$
Patient's evaluation of medical services in the community	19	100	68	43	$X^2=42.51$ $p<.005$
Your control over the care of your out-patients using the hospital	21	95	41	46	$X^2=14.63$ $p<.005$
The status of Wilmington medical facilities in relation to those in other communities	67	91	25	32	$X^2=32.51$ $p<.005$
Your professional standing in the National Medical Profession	20	90	10	40	$X^2=8.27$ $p<.025$
Your satisfaction with your status in the local medical community	21	90	45	49	$X^2=16.65$ $p<.005$
Your ability to operate as autonomous professional within the medical community	11	100	71	54	$X^2=12.81$ $p<.005$

cent of those who perceived administration as doing a poor job oppose the merger as contrasted with about twenty per cent of the group who perceive administrators as performing their tasks extremely well.

We also included two items on the questionnaire (listed in Table 6) which, perhaps, are more easily interpreted by knowledgeable readers than the researchers who are not members of the local medical community. Table 6 seems to be another indication that those who are opposed to ideas generally known to be favored by hospital administrators are more likely to have voted against the merger than those who agree with such ideas. It is also possible that these figures reflect opposition to centralization, per se, rather than with disenchantment with administrators.

Finally, to complete this sociological profile on the sub-groups who voted for and against the merger, we present a broad series of proportions reflecting respondent's attitudes supposedly formed after merger had begun.

The proportions in Table 7 confirm what one would expect. That is, one who sees improvement in services with merger is likely to have voted for the merger. It should be noted that of the approximately 210 respondenteen per cent saw some improvement, twenty-two per cent saw some decline, and sixty-one per cent saw little or no change in these services after merger. Contrasting the vote of those sixty-one per cent who perceived little or no change with the vote of those who saw some change, whether it was positive or negative, presents us with an interesting fact. Thirty-four per cent of those who perceived change, at least on these items, as contrasted with twenty-seven per cent of those who perceived no change, voted against the merger. This significant[5] difference may provide an answer to one question posed in the beginning of this article. Possibly some respondents vote against change simply because it is change.

Summary

A respondent's position on merger is related to a myriad of social, economic, political and philosophical values. This article demonstrates some of the sociological factors related to vote on merger.

Our findings indicate that the physicians' vote is associated with such things as their

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[5] $X^2=10.08$ $p< .01$

Continued on page 47

A COMMUNITY FORMULARY FOR DELAWARE?

● **Can the cost of medical services be reduced without a concomitant reduction in the quality of care? A group of health professionals in Delaware feels that this is possible and is working to create a voluntary community formulary in an attempt to reduce the cost of medication to the patient.**

JOSEPH L. FINK III

Increasing attention has been given to the high cost of medical care in recent years in both the lay press and the professional press. The health professions have been called upon again and again to answer the charge that the cost of medical care is excessive and, in turn, have undertaken in some areas an introspective study of the health care system to determine those areas where costs may be reduced without a decline in quality of health care.

The federal government has also turned its eye to this problem and, since the passage of Medicaid, has looked on generic prescribing as one means of reducing costs of administering present programs.[1] However, of considerable importance are the facts that the agents dispensed generically must be of high quality and that the resultant savings must be passed on to the patient. This is of significance to the physician for it is his responsibility to direct the patient down a path of therapy leading to cure or palliation of a disorder. It is of importance to the pharmacist for he must dispense the chemotherapeutic agent.

The establishment of community formularies has been officially recommended by the American Pharmaceutical Association as one means of reducing drug costs to the public.[2] A study in Virginia has shown that physicians and pharmacists can cooperate to improve prescription writing and the use of generic drugs. The same study demonstrated that when generic prescriptions were written some resultant saving was passed on to the patient by the pharmacist.[3]

Editorial comments appear on page 48

"In the interest of better patient care, there should be a program of objective evaluation, selection, and use of medicinal agents in the hospital. This program is the basis of rational drug therapy."[4] This statement is contained in the preamble of the Statement of Guiding Principles on the Operation of the Hospital Formulary System approved by the American Medical Association, American Pharmaceutical Association, American Society of Hospital Pharmacists, and the American Hospital Association. A paraphrasing of the first sentence by substitution of the word "community" for "hospital" would make this statement applicable to the community practice of medicine and form the basis for a community formulary.

Basic Functions

The task of evaluation and selection of medicinals for inclusion in the formulary is perfomed by the Pharmacy and Therapeutics Committee of the medical and pharmacy staff of the hospital. In the community a similar body composed of the representatives of the medical and pharmaceutical professions would perform the functions basic to this task, which include:

Mr. Fink is a senior pharmacy student, Philadelphia College of Pharmacy and Science, and Past National President, Student American Pharmaceutical Association.

1. To provide a compilation of drugs which will ultimately reduce patient costs while maintaining the present-day excellence of drug therapy.
2. To advise, inform and educate practicing health professionals of the professional and economic advantages possible through the utilization of an approved pharmaceutical formulary.
3. To encourage the utilization of a drug formulary by practicing health professionals in the best interest of the patient.
4. To promote the cooperation and coordination between members of the health professions in providing optimal health care services.
5. To meet the obligation of all health practitioners to the public, ie to provide the highest standard of health care services at the lowest possible cost.

The listing of drugs in a formulary is designed to allow the patient to receive the least expensive of a variety of chemically equivalent products. The formulary products are selected on the basis of their professionally determined therapeutic efficacy. The physician and patient are assured a quality product in that the screening body, ie, Pharmacy and Therapeutics Committee, must approve the manufacturer from which the drug is purchased prior to the pharmacy dispensing a drug ordered on a formulary basis.

Reduction of Patient Costs

The utilization of this system can result in reduction of patient costs by the following means:

1. Reduction in inventory levels of the various trade names for one drug and subsequent dispensing of only the one approved, if the prescriber so designates.
2. Purchase of greater quantities since, ideally, one drug will be ordered (one trade name) instead of a number of trade name products of the same drug. Greater quantity purchases will usually result in lower costs.

The analog of the Pharmacy and Therapeutics Committee of the hospital is called the Formulary Advisory Board in Delaware. The chairman of the Board is any member of the Board. The Board is composed of four physicians who are members of the Medical Society of Delaware, three pharmacists who are members of the Delaware Pharmaceutical Society, one dentist who is a member of the Delaware State Dental Society, and one osteopathic physician who is a member of the Delaware State Osteopathic Society. These members are selected by their respective professional organizations and shall serve three-year terms of office. The presidents of the respective professional organizations or their representatives are ex-officio, non-voting members. The secretary shall be a pharmacist and will be selected by the Delaware Pharmaceutical Society. The executive committee of the Board is composed of the chairman, secretary, and one non-pharmacist member of the Board. The Board will meet at least once a quarter.

Drugs Proposed for Addition to Formulary

The Formulary Advisory Board will evaluate and review drugs proposed for addition to the formulary. Upon review the Formulary Advisory Board may decide to:

a) Approve the product for listing in the formulary; or

b) Disapprove the product for listing in the formulary; or

c) Recommend that further information or data be obtained and defer action pending receipt and evaluation of such additional information.

The Board shall then publish the list of approved agents by non-proprietary name, trade name, and manufacturer. A cross-reference trade-name non-proprietary name will also be present. An up-to-date formulary will be provided to all physicians, dentists, and pharmacists. Additions to and deletions from the formulary will be disseminated by periodic mailings.

Physicians and dentists desiring to order a drug under the Delaware formulary system may do so by one of two ways:

a) By prescribing the drug by non-propietary name utilizing the formulary prescription blank. Medical practitioners desiring their prescription to be considered as falling under the formulary system must check this box appearing on the prescription order form:
or formulary equivalent ☐

b) By designating on a regular prescription order form his desire that the drug dispensed be approved by the Formulary Advisory Board. He could do this by writing "formulary" on the prescription order form or by any other means so indicated by the Board.

Requests that a drug be added to or deleted from the formulary may be made in any of the following ways:

a) A letter stating such submitted by a professional who is a member of one of the health professions represented on the Board. This letter should be forwarded to the secretary.

b) The secretary may bring to the Board's attention a drug on which a decision is necessary.

c) Any member of the Board can make such a request.

Similar systems have been functioning for many years throughout the country in hospitals of all sizes and have resulted in decreased drug costs. The systems have been well received by the treated public and by the medical and dental practitioners utilizing them. The extension of such a system to ambulatory patients has been successful with hospital outpatients and could be expected to be successful outside of the hospital setting.

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STREPTOCOCCAL PHARYNGITIS

Continued from page 34

cation of the criteria for diagnosis outlined earlier.

The throat culture, like any other laboratory determination, should have its indications. These indications should protect from overuse as well as underuse. This procedure has a psychological hazard in that the physician taking a throat culture frequently simultaneously places the child on antibiotics.[2] Once the patient is receiving antibiotics the inclination is to continue their use even after negative bacteriologic findings are known.[2] Add to this factor the effects of the current carrier rate, and a great abuse of antibiotics is evident. Careful clinical appraisal of the child with the upper respiratory infection would lead to a safe reduction in the number of throat cultures taken and an improved ability of the physician to recognize streptococcal pharyngitis. The physician confident of his diagnosis would await laboratory confirmation before initiating antibiotic therapy. To this end our system of ratings is recommended.

ACKNOWLEDGEMENT.
Janet Clark, Ph.D., Coordinator of Research, Wilmington Medical Center, provided valuable editorial assistance in the adaptation of Doctor Randolph's paper for the Journal.

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Parts II and III will appear in succeeding issues of the Journal.

Highlights

ABNORMALITIES OF SEXUAL DIFFERENTIATION

Jo Anne Brasel, M.D. — *Asst. Professor of Pediatrics, New York Hospital-Cornell Medical Center, Pediatric Conference, WMC, November, 1968.*

A physician faced with the problem of ambiguous external genitalia has a strong obligation to proceed to an accurate diagnosis immediately. Too often in the past accurate diagnosis has been deferred. This is a fact to be deplored since we now know that gender identity in the child is well established by the age of two years. The child beginning to talk uses sex-specific pronouns to refer to himself, and therefore any necessary therapeutic change because of mistaken gender must be made before the age of two years to avoid serious psychologic problems in the child as well as in his parents.

Normal Sexual Differentiation

The early fetal gonad is bipotential. From its medullary component is developed the hilus of the ovary or the interstitium of the testis. The parenchyma of the ovary and the germinal epithelium of the testis develop from its cortical component. Testicular development requires the presence of a Y chromosome irrespective of the number of X chromosomes present. If more than one X chromosome is present along with the Y chromosome, however, the germinal epithelium of the testis will usually be defective. Two or more X chromosomes without a Y chromosome will result in ovarian development. A single X chromosome is usually associated with formation of the "streak" gonad.

Both male and female fetuses develop in identical fashion until the second or third month of pregnancy. The mullerian system gives rise to the uterus, the fallopian tubes and the proximal third of the vagina. The wolffian system develops into the prostate, seminal vesicles and the vas deferens. The ovary plays no role in the development of the internal or external genitalia, and in the absence of an ovary or the total absence of a gonad, the fetus will develop along female lines.

Androgens influence the external genitalia. Normally androgen from the fetal testis is responsible for the development of male external genitalia, but androgen from any source such as Norlutin given to the mother, androgens arising from a virilizing maternal tumor or androgens from the fetal adrenal as in congenital adrenal hyperplasia will also cause development of the external genitalia along male lines.

The substance responsible for the development of male internal structures is not an androgen. It has been variously referred to as male organizing substance, mullerian inhibiting factor (MIF) and localizing inducor substance. Although not specifically identified, it is known not to be a steroid, and its action is a local one leading to regression of the mullerian system and development of the wolffian structures.

Abnormal Sexual Differentiation

The most common cause of ambiguous external genitalia in the female is pseudohermaphroditism due to congential virilizing adrenal hyperplasia. In such cases the 17-ketosteroid excretion will be increased, and sex chromatin determined by buccal smear will be positive. Suppression of the excessive androgen production by administration of physiologic doses of glucocorticoids will result in cessation of the virilization and maturation along female lines.

Male pseudohermaphroditism is more rare. The majority of cases of maldevelopment of male genitalia are due to isolated instances of hypospadius with or without cryptorchism. It is important in the evaluation of these infants to confirm that the genetic sex is indeed male by performing a buccal smear and karyotyping as necessary.

The appropriate evaluation of the child with abnormal external genitalia includes a careful history and physical examination, a buccal smear and determination of urinary 17-ketosteroids. Vaginogram and cystogram may help define the anatomic abnormality and assist in planning the surgical approach. Laparotomy as a diagnostic procedure in the female is indicated only after exogenous sources of androgen and congenital virilizing adrenal hyperplasia have been ruled out as the cause for the masculinization.

Since the female pseudohermaphrodite is usually fertile, specific therapy including surgery to restore the female genitalia to normal female appearance and function is indicated. In male pseudohermaphroditism administration of androgens in adequate amounts and plastic surgery may still not assure the development of a phallus adequate for adult male sexual function, so that a more appropriate course in the treatment of patients of this type may be gonadectomy, plastic repair of the external genitalia along female lines and establishment of female gender identity. Estrogen replacement will, of course, be necessary at adolescence to bring about breast development and feminine body contours. In the syndrome of testicular feminization no amount of androgen will convert the phenotype to maleness, and gonadectomy with preservation of female phenotype is the indicated form of management.

Chromosomal Abnormalities

Abnormality of the sex chromosomes often alters sexual development and is at times associated with disturbed somatic development as well. Abnormal external genitalia, however, is not a common finding.

A high index of suspicion of Turner's syndrome (gonadal dysgenesis) is indicated when the evaluation of a short girl reveals a high urinary FSH excretion in the absence of estrogen effects. In addition to the well known webbing of the neck, these girls often will have pigmented nevi, hypoplasia of the nails and areolae, micrognathia, coarctation of the aorta, and various anomalies in the urinary tract. Eighty per cent of these patients have a chromosomal pattern in which 45 chromosomes with only one X instead of the usual 46 are present and are chromatin negative on buccal smear. Twenty per cent of Turner's syndrome patients, however, have 46 chromosomes, but the second X is abnormal, or alternately the patient may have XO/XX mosaicism, with the second X being either a normal or abnormal X.

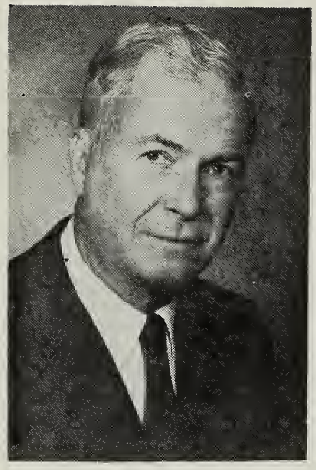
Classic Klinefelter's patients are chromatin positive despite the male phenotype. The testes are small and hyalinized after adolescence. Gynecomastia is frequent. There is often inadequate androgen production in adulthood. In one series three per cent of apparently classical Klinefelter patients were fertile, but perhaps these cases represent instances of mosaicism. The usual karyotype in these patients is 47 chromosomes with an XXY sex chromosome complement.

The presence of an extra Y chromosome (47 XYY) produces a male phenotype, high gonadotropin excretion, and usually excessive height. This chromosomal abnormality is frequently associated with a sociopathic, aggressive personality. In contrast the triple-X (47 XXX) or super female has a normal female phenotype, is frequently eunuchoid in body proportion, and most often mentally retarded.

The XO/XY mosaicism patients present a variable phenotype from classic Turner's syndrome to a normal boy with unilateral cryptorchism. Hypospadius is common. Characteristically they have assymmetrical internal gonadal development with a streak gonad and some mullerian remnants on one side and testicular development on the other. Fertility is probably impaired in these patients.

A knowledge of the embryology and physiology of the development of the external and

Continued on page 47



President's Page

PEER REVIEW AND PROFESSIONAL EVALUATION

The House of Delegates of the American Medical Association in its 1969 Annual Convention adopted Report F, of the Council on Medical Service entitled The Medical Profession and Peer Review. The last paragraph of this report follows: "The Council on Medical Service knows no greater challenge facing the profession today than to secure universal acceptance and application of the review concept as the most meaningful method for creating a public awareness of medicine's efforts to assure high quality of health services at a reasonable cost, slowing the rate of escalation in health care charges, stimulating health insurance organizations to make broader protection available to more people, and retaining professional control in patient-physician fiscal and economic relationships."

The American public through the mass media of newspapers, television, and radio has been led to believe that the physicians are to a large part responsible for the increasing cost of quality medical care. There is considerable doubt in the minds of concerned people in government and in the third party mechanism that the medical profession can indeed institute and operate an effective peer review system.

It is at this point in time that an effective peer review and professional evaluation mechanism must be made visible to the public to such a degree that there will be no question as to the ability of the medical profession to provide peer-monitored quality health care at reasonable cost. It is also necessary to demonstrate to the third party mechanism, be they the Blues as insurers or fiscal agents, commercial insurance companies, State or Federal government agencies, that we as physicians really mean to establish and operate an effective peer review mechanism.

It appears that the State of Delaware, as well as every other state, must establish through state and county medical societies, an active and innovative committee on peer review and professional evaluation. This committee will be responsible for self-evaluation and self-discipline of the medical profession as it practices the art and science of medicine in the home, office, and institution, or indeed, anywhere. In a state as small as Delaware, this should be structured in such a unitary and cooperative fashion that the county committees are really a part of, and indeed comprise, the state committee so that while the peer contacts can usually be best developed at the local level, the mechanism is built in for recourse to the state level where necessary, and the free flow of communication is maintained in the development of positive programs as they evolve on all levels, local through state, to national and back.

The function of the peer review and professional evaluation committee will include the following:

1. Review of present Blue Shield backlog of questionable practices, charges, medical necessity and utilization, and development of an on-going mechanism for continuous monitoring of the same.

2. Creation of a visible mechanism for input from all other sources including physicians, patients, State and Federal government agencies, and other third parties.

3. Development of criteria concerning utilization and medical necessity in respect to diagnosis and therapy for conditions treated in the office, home, and nursing home, similar to the PAD* of hospital utilization review committees, already established as an excellently functioning guide for the county peer committees of the future.

4. Techniques for in-office appraisal of a physician's attitudes, practices, charges, record keeping, and system of continuing self-improvement and education.

5. Over view of hospital utilization and peer review functions, especially the prodding of clinical departments to create effective review and quality control over all services rendered by physicians to their patients — surgical, medical, obstetrical, and pediatric.

The peer review and professional evaluation committee will be established in Delaware by the President of the Medical Society of Delaware working cooperatively with the Presidents of each county society. The understanding, cooperation, and participation of every physician in the State in this endeavor is solicited.

Henry H Stroud

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* Prior Agreed Days

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WILMINGTON HOSPITAL MERGER

Continued from page 40

ties in time to the community, their age, the hospital they primarily utilized prior to mergents who answered this series of questions, no more than 47 and as few as 11 saw improvement in the various services and as many as 84 respondents saw some decline in one of the listed services.

More importantly, of all the responses to the items listed in Table 7 an average of sever, their attitudes towards administrators and centralization and their perception of the costs and benefits resulting from several years of experience with merger. It would appear to be true that the more investment one had in the system prior to merger, the more likely one was to oppose merger. It would also appear to be true that colleague reinforcement of opinions is an important factor as witnessed by the group vote in Memorial Division.

The attitude questions seem to demonstrate what is well known in the social sciences. That is, those who negatively perceive the talents of such specialists as administrators, will also perceive their proposals in a negative fashion. Subsequently, the changes wrought by merger are viewed differentially given one's evaluation of the advocates of merger.

HIGHLIGHTS — BRASEL

Continued from page 45

internal genitalia and the abnormalities in this system which may occur in association with hormonal and chromosomal abnormalities is of prime importance in logical differential diagnosis of abnormal sexual development. It is frequently necessary to explain to the parents that the sex glands of the infant have developed in an incomplete fashion and further more detailed studies will be necessary in order to definitely establish the infant's gender. The need to perform these studies promptly and establish the appropriate sex of rearing at the earliest possible time has already been emphasized.

Editorials

A VOLUNTARY DELAWARE FORMULARY

The Delaware Formulary Advisory Board consisting of representatives from the medical, dental, osteopathic and pharmaceutical disciplines of the State of Delaware has been in existence for well over a year. The goal of this Advisory Board is to obtain the best in pharmaceuticals for the citizens of this state at the lowest possible cost.

Reports from other sections of the country suggest that when the medical and allied disciplines band together in their support of a voluntary community formulary, the pharmacist passes the resultant savings on to the patient. Since the local pharmaceutical society was responsible for establishing the Formulary Advisory Board, it seems obvious that pharmacists in the State of Delaware will utilize the formulary to lower the cost of medicines for their customers.

Since the federal government and private insurance carriers are assuming a larger portion of the drug bill, an increasing effort should be made to hold down the cost of medicines by voluntary plans before such reductions are legislated.

An additional benefit of the Formulary Plan is the improvement in prescription writing which results from the use of generic terminology. While the use of trade names might identify the company manufacturing a particular product, the physician is misled at times into the illusion that a different trade name actually represents a different drug. One objection raised to generic prescribing is that the physician may have to accept a product from a pharmaceutical house with which he is not familiar and therefore, in which he has no confidence. It would appear that in this day and age, the physician does not have the time or background to be familiar with each pharmaceutical company or the quality of its various products. Logically, this responsibility should be delegated to the pharmacist, the member of the medical team with the necessary training and experience in pharmacology.

The pharmaceutical profession in this state appears willing and capable of assuming the responsibility of monitoring the quality of the generic drugs included in the voluntary formulary.

Details of the operation of the formulary are presented in an article elsewhere in this issue.

I would anticipate that the medical community will give wholehearted support to the efforts of the Delaware Formulary Advisory Board to establish a functioning voluntary community formulary in the State of Delaware.

W.J.H.

SOME INTERESTING FACTS ABOUT MEDICAL COSTS

Our great American universities have all sorts of specialized departments. One of these is the University of Chicago's *Center for Health Administration Studies* from which a most interesting paper entitled "Rising Costs Are Inherent in Modern Health Care Systems" has recently emanated.[1] Since Dr. Anderson, the first author, is identified therein as serving on the research advisory committee of the mighty Blue Cross Association, one wishes that his paper had been read by the top-brass of our local Blues before their recent announcement of the premium increase in Delaware was published in our local newspaper, an announcement which included the infelicitous statement that "doctors seem to have a death wish." For although autonecrophilia may be true to some extent, it was not apropos to a discussion of the increased costs of hospitalization.

In further inevitable discussions of this touchy subject, the advice of the heroes of Dragnet ("Just give the facts, Ma'am,") would be desirable.

"Rising expenditures are not peculiar to hospitals in the United States. Health care systems in other countries are experiencing the same difficulties. These rising expenditures are taking place regardless of the ownership of the hospitals, the sources and control of funds, the degree of centralized control over the total operation, and the hospital staffing patterns," state the authors in their opening paragraph. As documentation of this very important statement, the authors compare the index of expenditures per patient day for all hospitals from 1955 on in the USA, England and Sweden. In the last two, hospital care is almost totally "free" at time of service, ie, financed by government insurance programs as compared to the United States. During the decade under study the US enrolled more than three-quarters of its population in some sort of hospital insurance, but as we all know, this insurance is rarely so complete as to be allowed to be called "free at time of service."

Here are the facts, presented in the form of a table abridged from this article. (The figures were achieved by dividing costs by total patient days.)

Year	USA	England	Sweden
1955	100	100	100
1965	225	244	295

The table comparing total hospital expenditures is very similar.

Moreover, in 1890 the per diem costs per day in eastern US hospitals were about $1.25 (the good old days). In 1954, the same figure was $22. But in England between 1911 and 1954, total hospital expenditures rose more than a hundredfold and costs per bed climbed to 76 times the original amount. "Given the technological explosion in medicine, this acceleration is healthy for the maintenance of a dynamic hospital system, but this reasoning does not make it any easier for society to pay the costs." The economic niceties of the first part of that quote are beyond us, but we can certainly appreciate the truth of the last part of the sentence.

That inflation is not the largest part of the price increases is shown by some sort of statistical manipulation which allows the derivation of a "consumer price index" (CPI) for hospital per diem costs, which shows that the relative CPI's for the three countries are 118, 136, and 143 with per diem expenditures not explained by CPI being calculated as 191, 179, and 206. The same table reveals average length of hospital stay to be 75, 71, and 89 — indicating to us that the system where the patient pays the most from his own pocket is not a guarantee of shortest stay although it does suggest that stay in a "free hospital" may be longer. (All of the above figures read USA, England, Sweden.)

In all fairness it should be noted that the cost tabulations from England and Sweden include more salaries of physicians than do US figures, since there physicians' fees are largely included in hospital costs. But costs have climbed in these other countries just as they have in ours; a socialized system does not in the least prevent or even discourage escalation of hospital costs.

"The issues of expenditures, use patterns, and organizational arrangements are discussed with frustration and stridency in all three countries," say these experts, who qualify this reassuring internationality of medical human nature with the piquant statement that in Sweden "public policy formation appears to be more deliberative and pragmatic than in the US and England."

"The problem that remains is one of containing expenditures without inhibiting the progress inherent in modern health services systems."

Amen. And it is nice to know that we are not really uniquely spendthrifts, nor uniquely frustrated or strident in our discussions of hospital costs.

B.Z.P.

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Delaware Academy of General Practice

EIGHTEENTH ANNUAL MEETING AND SCIENTIFIC ASSEMBLY OF DELAWARE CHAPTER, A.A.G.P.

SCHEDULE OF EVENTS

Tuesday, March 10, 1970

P.M.

8:30 Annual Business Meeting — Academy of Medicine, Lovering Avenue at Union Street
Refreshments following meeting

Saturday, March 14, 1970

A.M.

8:45 - 9:25 Registration — Visit Exhibits

9:25 President's Welcome — Jack Gelb, M.D.

9:30 "How Much Exercise Should You Prescribe?"
James S. Skinner, Ph.D.
Assistant Professor, Human Performance Research Laboratory,
Penn State University
University Park, Pennsylvania

10:10 Recess — Visit Exhibits

10:40 "Testing and Developing Cardiovascular Fitness"
Lieutenant Colonel Kenneth H. Cooper, USAF (MC)

11:20 Panel Discussion
Moderator —
Kenneth M. Corrin, Jr., M.D.
Director of Cardiac Catheterization Laboratory,
Wilmington Medical Center

12:00 Luncheon — Exhibits

P.M.

1:30 "Evaluation of Middle-Aged Men in an Exercise Program"
John J. Kelly, M.D.
Assistant Professor, Clinical Medicine,
Jefferson Medical College,
Thomas Jefferson University,
Philadelphia, Pennsylvania

2:10 Recess — Visit Exhibits

2:40 "Hypokinetic Disease"
William J. Erdman, M.D.
Chairman, Department of Physical Medicine and Rehabilitation,
Hospital of the University of Pennsylvania,
Philadelphia, Pennsylvania

3:20 Panel Discussion
Moderator —
Anthony L. Cucuzzella, M.D.
Medical Director, Eugene duPont Memorial Hospital, and Acting Chief, Department of Physical Medicine and Rehabilitation, Wilmington Medical Center

4:00 Adjournment

6:30 Cocktails — Gold Ballroom, Hotel duPont

7:30 Dinner — Dance
Reservations — Mrs. Potocki
654-0404
998-2858

A MESSAGE

"Our health facilities must be such that any of us who is unfortunate enough to fall ill can get good treatment, promptly. And we must help people who are genuinely in need — the handicapped, the blind, the aged, the fatherless children. We must weed out those who would abuse our concern for the needy. Our present system does neither of these things efficiently. We can't do everything at once. Problems created over the years cannot be solved overnight. But we can get started."

GOVERNOR RUSSELL W. PETERSON

Letters to the Editor

• This section of the Journal is intended as a forum through which our readers may express their opinions on matters which concern the medical and allied professions.

The Editors

To the Editor:

During the past year, Delaware has experienced an increase in the number of rubeola cases reported. The number of cases for 1969 is 552 which after several years of diminishing morbidity represents a considerable increase. The State Board of Health feels that this increase may be due to the recent emphasis on measles and rubella and their vaccines which resulted in more conscientious reporting. Irrespective of this factor, the incidence of measles has increased, particularly in preschool children.

This increase brings to mind several questions worthy of consideration. First, in light of the widespread use of the vaccine, how can this disease continue to thrive? Secondly, how can future outbreaks like this be prevented? And finally, are we as physicians making every effort to protect our young patients against this disease?

The State Board of Health has currently a policy of dispensing antigens to the physicians of the State free of charge. The only stipulation for the use of this vaccine is that no charge be assessed the patient for the vaccine itself. The physician can charge the patient for administration of the vaccine if he desires. This vaccine may be picked up at any Board of Health unit in the State.

Perhaps by combining the resources of both private and public medicine, the measles problem in Delaware can be effectively eliminated.

Edward F. Gliwa, M.D.
Deputy Health Officer
State Board of Health

To the Editor:

I am appreciative of Doctor William Johnson's editorial, "Malnutrition & Pregnancy" in the Delaware Medical Journal, November 1969.

Since my book on metabolic toxemia was published, I have been trying to get U. S. obstetricians, the F.D.A., the U.S.P.H.S. et al to recognize the unmet needs of our pregnant women and girls in poverty. It has been so terribly wrong to leave their advice regarding pregnancy nutrition in the hands of young, inexperienced Ob-Gyn residents, who are usually surgically oriented. What the U.S. private drug companies have done with their saluretic diuretics is also a terrible crime because it has kept attention focused on sodium, water, renal function and diuretics instead of on good nutrition. Although the crying need is to bring scientific nutrition into our public prenatal clinics, many maternal and infant care projects have in my opinion failed by not having done so.

For so many years good farmers have fed their pregnant livestock with scientific care; we've just got to catch up in human prenatal care. Your excellent editorial should help overcome the old, unscientific traditions and blind indifference which have dominated this vital area of human health here in the U.S.A. for too many generations.

Thomas Brewer, M.D.
Richmond, California

In Brief

In the News

William O. LaMotte, Jr., M.D. has been named Chairman of the Council on Legislative Activities of the American Medical Association.

William J. Holloway, M.D. has been appointed the official Delegate of the Medical Society of Delaware to the Decennial Meeting of the United States Pharmacopeial Convention to be held in Washington, D.C., April 8-10, 1970. The Medical Society of Delaware is one of only 281 organizations eligible for representation in the Convention. The delegates at this meeting will be considering new Pharmacopeial programs concerning drug information for the professions of medicine and pharmacy.

Speakers on "Ask the Doctor"

Speakers for March, 1970 on the Tuesday radio program, (11:05 a.m. WDEL) produced by the Medical Society of Delaware are: March 3, W. O. LaMotte, Jr., M.D., *The Eclipse and Your Eyes;* March 10, Charles L. Minor, M.D., *Surgical Procedures of the Newborn*; March 17, To be announced; March 24, H. Thomas McGuire, M.D., *Alcoholism;* March 31, J. Jordan Storlazzi, Jr., M.D., *Overactive Children.*

Eclipse Warning

Calvin B. Hearne, M.D., Chairman of the Public Relations Committee, of the Medical Society of Delaware, warns that a total eclipse of the sun is due March 7th, the first since 1963. The path of total eclipse will cross part of the Delmarva Peninsula, and most of the State of Delaware will be in an area where there is a high percentage of eclipse, if not total eclipse. The last eclipse in 1963 resulted in serious and permanent eye damage to many people who watched the eclipse.

The damage to the eye is most often due to a burn of the retina by the sun's rays. Looking at an eclipse using sunglasses, photographic film, or smoked glass does not cause pain, because the retina is not sensitive to pain, and such burns of the retina are not "felt." It has been erroneously felt in the past that viewing an eclipse using sunglasses, smoked glasses, or exposed photographic film, would be safe. There is no way in which one can safely view the sun directly without sustaining irreparable damage to the eyes.

Since eye damage resulting from exposure to the direct rays of the sun is incurable and since retinal burns produce a blank spot in the victim's field of vision in the vital small area used for reading and for all fine seeing, be sure on the day of the eclipse that you do not look directly at the sun.

Infectious Disease Symposium

The Seventh Annual Infectious Disease Symposium will be held at the Delaware Academy of Medicine (1925 Lovering Avenue, Wilmington, Delaware) on May 6, 7 and 8. This symposium is co-sponsored by the Delaware Tuberculosis and Health Society, the Delaware Academy of Medicine and the Wilmington Medical Center. The faculty to date includes: William Brumfitt, London, England; Sydney M. Finegold, M.D., Los Angeles, California; Michael W. Rytel, M.D., Marquette School of Medicine, Wisconsin; George Jackson, M.D., University of Illinois at the Medical Center; David Lines, M.D., Madison, Wisconsin; John K. Lattimer, M.D., New York City; Charles V. Pryles, M.D., The Jewish

Hospital and Medical Center of Brooklyn; Maclyn McCarty, M.D., The Rockefellor University; William M. M. Kirby, M.D., University of Washington School of Medicine; Clair E. Cox, M.D., Bowman Gray School of Medicine of Wake Forest University; Joseph P. Truant, Ph.D., Michigan and Joseph Szekelvfoldi, M.D., Hungary. Complete schedule of program will be listed in the Delaware Medical Journal in the near future.

Physician-Nurse Conference

The Medical Society of Delaware will present an all-day physician-nurse conference at the Academy of Medicine on May 13, 1970. Theme of the conference will be "Teamwork, Logistics and Communications Leading to Tender Loving Care." The Delaware Nurses' Association and the Delaware League of Nursing are cooperating in the presentation. Representatives of the various nursing programs will describe what their students are trained to do. Physicians' presentations will outline the relationship of their types of practice to nursing. Group conferences and a question and answer period moderated by Dr. William H. Duncan, the program chairman, will conclude the day. For registration and luncheon reservation, contact the office of the Medical Society of Delaware, 1925 Lovering Avenue, Wilmington.

CLINICAL NOTICES AND MEETINGS

U of P Courses

The University of Pennsylvania School of Medicine announces two courses: *Pulmonary Physiology,* March 2-6; and *Maxillofacial Anatomy and Surgery,* March 30-April 4. Inquiries for admission should be sent to: Office of Graduate Medical Education, University of Pennsylvania, 288 Medical Laboratories Building, Philadelphia, Pennsylvania 19104.

Annual Scientific Meeting

The American Fertility Society announces its Third Postgraduate Course in conjunction with the Annual Scientific Meeting to be held at the Washington - Hilton Hotel, Washington, D.C., March 18-20. Certificates will be awarded upon completion of the course. Registration fee will be $75.00 total (including meals). For additional information contact: Herbert H. Thomas, M.D., Secretary, The American Fertility Society, 944 South 18th Street, Birmingham, Alabama 35205.

Tuberculosis Today

The National Communicable Disease Center, Atlanta, Georgia, will offer a new course, Tuberculosis Today eight times during 1970 — January 12-16, March 2-6, April 6-10, June 15-19, July 27-31, September 21-25, October 26-30, and December 7-11. Enrollment information and application forms can be obtained from State Health Departments or from the Tuberculosis Branch, National Communicable Disease Center, Atlanta, Georgia.

American College of Surgeons

The Eastern Sectional Meeting of the American College of Surgeons will be in Washington, D.C., March 16-18, 1970 at the Sheraton Park Hotel. This is the annual combined meeting for surgeons and nurses. In addition to general surgery sessions, there will be programs in seven specialties: gynecology-obstetrics, neurosurgery, ophthalmology, otolaryngology, plastic surgery and urology.

Cardiology Postgraduate Courses

Scheduled are: April 1-3, Birmingham, three days of Cardiology on *Myocardial Infarction;* May 11-15, Atlanta, five days of Cardiology on *Cardiology Today,* July 15-17, Montreal, special three days of Cardiology on *ECG and Cardiovascular Drugs.* Registration forms and additional information may be had from the Delaware Heart Association, Suite 60, Independence Mall, Wilmington 19803.

ACP Courses

The American College of Physicians announces the following courses: *Cardiovascular and Renal Disease: Pathophysiology and Pharmacology,* March 9-13, Presbyterian-St. Luke Hospital, Chicago, Illinois; *Neurology and the Internist,* March 23-26, Mayo Graduate School of Medicine, Rochester, Minnesota; *Rheumatic Diseases: Pathogenesis, Diagnosis and Treatment,* March 30 - April 3, University of Michigan Medical Center, Ann Arbor and *Current Concepts in Physiology of the Gastrointestinal, Endocrine, and Respiratory Systems,* April 9-11, Holiday Inn, City Line Avenue and Monument Road, Philadelphia.
For further information write: Edward C. Rosenow, Jr., M.D., Executive Director, American College of Physicians, 4200 Pine Street, Philadelphia, Pennsylvania 19104.

Rural Health Conference

The 23rd National Conference on Rural Health will be held April 9-10, 1970 at the Pfister Hotel and Tower, Milwaukee, Wisconsin. For information write: Council on Rural Health, American Medical Association, 535 North Dearborn Street, Chicago, Illinois 60610.

Cardiac Symposium

The Thirteenth Annual Joint Cardiac Symposium sponsored by the Washington Heart Association and the Heart Association of Northern Virginia, Inc., will be held at the Marriott Twin Bridges Motor Hotel, on US #1, Washington, D.C. (Virginia Side) in the Persian Room on Wednesday, April 8.

Postgraduate Course

The Department of Otolaryngology of the Eye and Ear Infirmary of the University of Illinois Hospital and the College of Medicine of the University of Illinois at the Medical Center, will conduct a postgraduate course in Laryngology and Bronchoesophagology from April 6-17. It will be held largely at the Eye and Ear Infirmary, and will include visits to a number of other Chicago hospitals. Interested registrants should write directly to the Department of Otolaryngology, College of Medicine, University of Illinois at the Medical Center, Postoffice Box 6998, Chicago, Illinois 60680.

World Congress of Gynecology and Obstetrics

The American College of Obstetricians and Gynecologists will host the Sixth World Congress of Gynecology and Obstetrics to be held in New York City, April 12-18. The Congress program is organized around four principal subjects: Maternal physiology and its disturbances in pregnancy; Antenatal and perinatal influences on the development of the fetus and child; Social and endocrinological aspects and problems of female children and adolescents; and Pre-cancerous lesions in gynecology. Registration and other information regarding the Congress is available from: Mr. Donald F. Richardson, Congress Coordinator, Sixth World Congress of Gynecology and Obstetrics, 79 West Monroe Street, Chicago, Illinois 60603.

Maryland Annual Meeting

Members are invited to attend the 172nd Annual Meeting of the Medical and Chirurgical Faculty of Maryland scheduled for April 1-3 in Baltimore. The annual Round Table Luncheon includes discussions on varied subjects of interest to all physicians. There is no registration fee, and credit will be given by the AAGP for attendance.

Mound Park Hospital Foundation Courses

The Mound Park Hospital Foundation, with the joint sponsorship of the Department of Medical Education of the Bayfront Medical Center, the University of Florida College of Medicine, Pinellas County Medical Society and the Florida Academy of General Practice announce the following postgraduate courses: *The Pulse of Laboratory Medicine,* April 16-18, and *Pediatric and Adolescent Psychiatry,* May 21-23. All classes, meetings and clinical conferences will be held at the Tides Hotel and Bath Club, Redington Beach (St. Petersburg), Florida. For further information write: Postgraduate Medical Education, Mound Park Hospital Foundation, Inc., St. Petersburg, Florida 33701.

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

VASCULAR CATHETERS — Thrombus Formation

Angiography was carried out in seven patients in whom indwelling vascular catheters had remained for 5 to 23 days. It was found that thrombi formed on all catheters but were wiped off when the catheters were withdrawn from the vessel. The clinical series was small and heterogeneous, different vessels were catheterized and different types of catheters were used. This, plus the fact that thrombi formed in all of the patients, indicates that the cause of the complication is not related to any particular disease, vessel, or type of catheter. This is consistent with the previous observation that the frequency of thromboembolism following percutaneous catheterization for arteriography varies mainly with the total area of that part of the catheter fed into the vessel. Anticoagulant prophylaxis did not prevent the development of thrombi. In many diagnostic and therapeutic procedures vascular catheterization is indispensable. However, the physician should be aware of the risks it carries.

Jacobsson, B. & Schlossman, D. (Sahlgrenska Sjukhuset, Univ. Gothenburg, Sweden), Radiol. 93:355, 1969.

RESERPINE AND BRONCHOSPASM

A middle-aged hypertensive and dyspneic woman with a history of mild, intermittent asthma since childhood, was given an intramuscular injection of 125 mg reserpine. The dyspnea, which improved initially, suddenly worsened and was associated with marked bronchospasm. The observer concludes: "We believe that in this patient the bronchospasm may have been precipitated by reserpine, perhaps via catecholamine depletion, and we wonder if this experience has been shared by others."

Wise, J. R. (Univ. Texas Southwest. Med. School, Dallas), NEJM 281:563 (Sept. 4) 1969.

In commenting on the above, Atuk and Owen (Ibid 908) note that decreased epinephrine excretion has been observed in asthmatic patients during stress, suggesting decreased adrenal medullary release of epinephrine in these patients. "If this is generally true, asthmatic patients should be particularly susceptible to reserpine, and it is puzzling why the side effect mentioned here is not encountered more frequently. Perhaps certain patients are more predisposed to the effects of sympathoadrenal imbalance than others. Perhaps the reaction occurs only with large doses. And perhaps, now that we know we should look for it, we shall see this adverse reaction more frequently."

CHLORAMPHENICOL

Delayed Clearance — Hematologic Toxicity

Chloramphenicol is a valuable therapeutic agent in certain serious infections. In view of the known hematologic toxicity of the antibiotic, it would be highly desirable to have some means of identifying patients prone to develop such toxicity prior to institution of treatment. Results of the present study indicate that delayed clearance of free chloramphenicol is characteristic of such patients. It is suggested that in adults a single blood level determination, obtained four to six hours after the intravenous administration of 500 mg chloramphenicol, may be a satisfactory screening test. The pattern of clearance of the antibiotic from serum in patients with (A) and without (B) evidence of chloramphenicol-induced hematologic toxicity as reflected in this study is as follows:

	1 hr.	2 hr.	4 hr.	6 hr.	8 hr.
A.	7.6 ± 1.9	6.6 ± 1.71	6.1 ± 1.82	4.5 ± 1.35	3.5 ± 0.99
B.	5.6 ± 1.42	4.9 ± 1.66	2.3 ± 0.61	1.2 ± 0.70	0.7 ± 0.86

Mean values free chloramphenicol expressed as mcgm/ml serum.

Suhrland LG & Weisberger AS Case-West. Reserve Univ., Cleveland, Ohio, Blood 34:466, 1969.

THE FORUM

Environment And Health

EDUCATING CHILDREN ABOUT SMOKING

WILLIAM WEISS, M.D.

During the ten years since I stopped smoking, my three children have passed one by one through the period of susceptible adolescence. Education against smoking should have been hitting them from all directions, but my oldest child went through her teens before the schools embarked on a significent teaching program in this area. I like to think that her aversion to smoking at the age of 20 is due to four years of helping me with research on the protoplasmic toxicity of cigarette smoke.

Last summer, as my second-born approached the age of 17, I found he was experimenting with cigarettes. I had an appointment at the East Orange Veterans Administration Hospital, so I took my son along with the thought of exposing him to the impact of some impressive research.

I wish youngsters all over the world could have made that trip with us. A member of the staff took us on a tour of the facilities, including a visit to the canine project. One hundred beagles were housed in ten "wards," each dog in a cage. At the far end of the room there was a cubicle containing a chair and a small table on which there was a cigarette holder connected to some tubing. A handler opened a cage door and a beagle jumped gleefully to the floor, trotted immediately to the cubicle, hopped into the chair and let the handler attach the tubing to a tracheostomy in his neck. The dog began to salivate in anticipation as the cigarette was lit, illustrating Pavlov's conditioned reflex. The handler compressed the animal's nostrils and mouth, forcing him to inhale through the tracheostomy. On expiration the dog's nostrils were released so smoke came spurting out of his nose. We realized with something of a shock that this animal was enjoying the whole procedure. Here was a dog doing what most people think of as a sophisticated, peculiarly human accomplishment — smoking a cigarette. The handler explained that it does not take long to get a new animal accustomed to smoking.

My son immediately stopped smoking cigarettes, but the victory was not quite complete — he smokes a pipe. My three children, aged 13 to 20, now include two nonsmokers and one pipe smoker. Anti-smoking efforts must be intensive and continuous. A short-lived program is bound to fail because the opposition is strong and persistent.

Clinical experience has convinced me that most adult cigarette smokers cannot be motivated to stop and the heaviest smokers are the most resistant. With recurrent sadness I see patients with lung cancer or advanced chronic obstructive lung disease who stop smoking too late when distressing symptoms force the decision upon them. Adult smokers are "hooked." The educational program most likely to be successful must be directed toward children before they arrive at the age when they are tempted to join the "hooked generation."

Dr. Weiss is Associate Professor of Medicine at the Hahnemann Medical College and Clinical Director of the Pulmonary Disease Service at the Philadelphia General Hospital, as well as Assistant Editor of the Archives of Environmental Health.

Adapted from *Undermining the Subsidy for Premature Death,* Archives of Environmental Health, Volume 19, August 1969.

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MEDICINE IN THE INNER CITY

• Inner city medical problems can be met if physicians make the crucial decision to do so, although the hour is late.

ALEXANDER H. HIRSCHFELD, M.D.

The health care problems of the inner city and the constantly deeper involvement of government in the health care delivery system bid fair to destroy the practice of medicine as physicians know it today. Yet if we follow our own traditions, exploit existing knowledge and use established techniques, we *can* meet inner city problems more effectively. And we can do it with financial reward to the practitioner, and in a manner that advances the position of the private sector of medicine.

How? The answers lie in the establishment of a Community Comprehensive Care Service, ComCare, for short. My assignment this evening is to define comprehensive care, and discuss how such a service can help solve the massive inner city health care problem. That this problem is fraught with political, racial and social tensions is quickly recognized, but in order to delineate professional responsibilities and potential contributions clearly, these tensions will be set aside in several places. Then the medical considerations can predominate, and we can attack the problem productively.

Three such considerations are essential to the effectiveness of ComCare. One is the doctor-patient relationship. The second is the role of the physician. And the third is an understanding of disability as a phenomenon independent of disease, as it so frequently appears in the inner city.

Editorial comments appear on page 75

In the area of doctor-patient relationships, progress, usually medicine's greatest ally, has become its greatest adversary. Throughout modern medical history physicians have fought harder to maintain the integrity of this personal contract than for any other issue. Progress, nonetheless, has interfered. American medicine has become devoted to research — the production of knowledge — and training — the dissemination of knowledge.

Delivered at the 180th Annual Session, Medical Society of Delaware, October 25, 1969.

Dr. Hirschfeld is Clinical Professor of Psychiatry, Wayne State University; Visiting Professor in Postgraduate Medicine, University of Southern California Medical School and University of Colorado Medical School.

And our institutions have increasingly acclimatized younger doctors to these goals. Inevitably, though unintentionally, patients have assumed less importance. Our excellence has thus become the cause of forgetting that clinic patients sometimes wait hours on end for a prescription.

The same progress demands that the intern and resident learn vast quantities of knowledge, requiring their frequent transfer from one service to another. And again, inevitably, but unintentionally, the patient loses. For when he returns to the outpatient clinic next month, he must start anew with a different doctor.

Separation Into Two Groups

Here is the area where medical practitioners and medical academicians tend to separate into two groups. The pre-clinical type is comfortable in his lab with test tubes, titrations, and laboratory animals. The clinician hones his keenness in dealing with his patients, and quickly learns that mothers become more disabled by viral infestations and other diseases when they are also worried about daughters who smoke pot. I know of no laboratory test for this malady of mothers, but I am certain that every man in this room can attest its pain-producing qualities. Moreover, clinicians know that these women come to doctors for help.

That these women seek medical aid for their worries is a response to the tradition of centuries: the clinician counsels and comforts as well as cures. But in medical school and in academic internship and residency house assignments, the young physician has learned little or nothing about counseling or comforting. When the academic physician meets the mother with the pot-smoking daughter, there can be no meeting of the minds, no satisfying, therapeutic doctor-patient involvement. Up to this point, I have carefully omitted any discussion of whether the clinician should or should not involve himself with the cares and concerns of many patients. But these confrontations occur, like it or not, and they represent a critical aspect of the inner city's medical problems since they are far more numerous as we slide down the scale of economic and social status.

Thus, our second medical consideration, the role of the physician, is at issue. Here, the research of my associate, Bob Behan, and me over the past decade has been most revealing. We have found that the general physician is more effective than the psychiatrist in handling the patient's socio-economic, cultural and psychological problems. That the medical doctor is called upon for therapy in the form of counseling and caring is a key point in comprehensive care.

Our third consideration is the existence of disability as a phenomenon independent of disease. Nowhere is such disability a more critical problem than in the inner city. The reasons for this become clear when one compares the situation of the suburban, upper-middle-class patient to that of a disadvantaged patient. My partner and I have worked with both workman's compensation litigants and sick doctors, and they provide a good contrast.

The Physician Has Unlimited Choice

The physician who dislikes surgical procedures can choose to be an internist. If he likes neither, he can become an administrator, a teacher, or a medical writer. His options are almost endless, transitions easy, and outside pressure nearly absent. The strain on his coping capacity is negligible because of inner flexibility, prior education, and multiple opportunities.

Contrast this with the unskilled laborer. At no time during his life does he have such options. Any kind of a job is difficult to get. And as he approaches forty-five the situation worsens. And if he has some seniority where he is all other options effectively close. Either he stays where he is, keeping his security, or he becomes a wanderer. Thus when the line is speeded up, he must either move faster, painful as that may be, or he must claim disability. No other avenue is open.

We have found this contrast between the privileged and under-privileged time after time, in every conceivable social, economic and cultural area, not just with work. This is why we say that the lower one is on the socio-economic scale, the more likely he is to suffer disability beyond that explained by disease, to feel symptoms for which there is no physiochemical or anatomical explanation. These patients come to the clinician more and more frequently for aid in coping, although they express their inability to deal with their pressures in physical terms.

This accounts for the frequent findings of many clinicians that the disabled workman fails to respond to medication or surgery. In our Chrysler studies, we found that patients need first of all a good doctor, one who can quickly and accurately diagnose any physical impairment presented. But more than that, they require someone who can understand their basic coping deficiencies, and can help deal with them.

Other studies at Yale, Hopkins and Illinois bear out the conclusion that impaired coping capacity is a central factor in many illnesses and that it is necessary for the physician to deal effectively with it, if therapy is to be successful.

Comprehensive Medicine

With these points in mind, the definition of comprehensive medicine is made. It is a concept of medical practice in which the profound therapeutic value of the doctor-patient involvement is exploited; in which the role of the physician as one who cures, counsels and cares is emphasized; in which the disability process as well as the disease process is diagnosed and treated. Comprehensive medicine is an integrative concept of medical practice in which the physician accepts the responsibility, thrust upon him throughout history, of dealing with the multiple causes of symptom production, including the patient's impaired capacity to cope with his environment.

How do these concepts apply to the inner city health care problem? Specifically, how can the Medical Society of Delaware apply them? The point of departure for the Com-Care venture will be the awareness of the gaps between the inner city patients and the doctor. The first efforts will therefore be to close the schism. We have already noted that the disadvantaged patient feels he cannot cope with his environment. He also tends to believe he cannot cope with the physician. In fact, he often sees both physician and hospital as part of the oppressive establishment. To begin, therefore, the inner city patient should have the safety of numbers, and be represented by his champions — his ministers, his local doctors, and his natural leaders. All will be insistent on informing the establishment of its past deficiencies. For this reason, the hospital should be represented by its director or by an important deputy, perhaps by a trustee or two, in addition to several physicians.

An Example of Complaint

An example of the kind of complaint frequently lodged is the one that came to the attention of our county medical society not long ago. An old gentleman had a stroke on Sunday morning, and his family called the medical society for assistance. A physician was assigned, but twelve hours later had not appeared. In sobbing desperation, the family called the doctor a second time, and when he recognized that the patient was now in extremis, he reacted. He told the family to call an ambulance and send the old gentleman to a small hospital. There, a resident from one of the great teaching institutions would be moonlighting, and the patient could get quick attention. Unfortunately, the house man's own hospital had unexpectedly kept him on duty that night, and the patient died unattended approximately 20 hours after seeking medical attention.

The community will be full of stories such as this one, which happens to be the saga of a white family with money to pay for care, and with education enough to know where to seek it. You can only imagine what else may be said by others less affluent and less educated. At the first meeting with an inner city group one can expect to hear repeated the kind of allegation printed in *Time* Magazine in November 1968: "For one-fifth of the U.S. population the risk of dying before the age of 45 is four times the U.S. average. In this group adults have four times as much disabling heart disease, ten times as much visual impairment, six times as much mental illness, mental retardation, and nervous disorder." There will be demands to know why this is so, why inner city people aren't getting satisfactory medical care.

Precisely at this point, the ComCare venture will succeed or fail. If we hear only the anger and hostility, we will leave or fight back. If, on the other hand, we hear the patients describing what they need from "my doctor," just as the suburban patients say they want something from "my doctor," the physician-patient relationship will have begun to develop.

The physician who has correctly interpreted the hostility and heard the pleas for help will be able to respond positively. He can suggest a community board, with a real voice in running the ComCare service. He can reassure the community that doctors assigned to ComCare will not rotate with excessive frequency, and that care will be available when it is needed. He can suggest that the ComCare Service should have Community Aides. The Aide would be someone whose primary qualification is that he be a trusted member of the community, emphatically not a professional whose long training has isolated him from the neighborhood. The Aide will be the people's agent in the clinic, their ambassador. Until it is possible for physician and patient to establish a one-to-one relationship, the Aide can be the intermediate, trusted to convey to the physician what the patient himself cannot. In one sentence, the Community Aide will be an added coping mechanism for each patient.

Another matter which the responsive physician may discuss in the first meeting is the question of physical accessibility. The complexity of transportation for inner city residents without their own automobiles is great, but it is not my opinion that this is the real problem. The people are saying they feel their great distance from help, that doctors, along with the hospitals and clinics they represent, are socially far away from them. Currently, cultural anthropologists are talking a great deal about territorial integrity, and our inner city people are expressing the same idea with a different vocabulary. They want the doctor to come into their territory, a symbolic indication that he is willing to do business on their level.

I do not believe that the location of the treatment, except for its symbolic value, is any more important in the central city than it is in the one-to-one relationship of suburban practice. Thus, within the territory of the community, the clinic may be located any place. Some realistic concessions will have to be made to the physician, as risks to property and limb are factors in today's city life. And bearing this in mind, the community may be willing to consider a ComCare operation within existing hospital buildings, provided it is separated from present services and can have its own community board, et cetera.

Anticipated Problems

In one form or another, these are the things that are likely to come up in the first meeting: the requests for help disguised as vituperation, the doctors' initial offerings of assistance, and the symbolic agreement that the doctor will leave hostile territory and operate in a community. These three things may seem quite new to the clinician. Or they may be interpreted more accurately as simply different manifestations of the old doctor-patient involvement.

In the actual operation of the clinic, the most important consideration is the personnel, medical and ancillary. The physician is "the captain of the therapeutic team," responsible for everything that happens to the patient. An example will illustrate the need for this more clearly than hours of description.

An industrial patient was hospitalized and in two or three days was discharged. His physician told him to report to the dispensary at the plant where he worked. When the man reported, the clerk asked him why he came, and he responded that he'd been told to do so by the physician who had treated him. The girl referred him to the Personnel Department, which referred him to the Workman's Compensation Section, which referred him to the Insurance Department. By this time, the man was frustrated and confused, and his symptoms were returning. He decided it was useless to try to buck the phalanx of unyielding clerks, and went home. Seven weeks later, he was still home, still ill, frightened, alone and confused. Ordinarily, this sequence ends either with a lawyer seeking retribution through Workman's Compensation or by a request for welfare.

Subsequent to some of the experiments in our study, the captain of the therapeutic team — the physician — was always charged with the responsibility of contacting the dispensary physician by phone. In the proposed clinic, many such functions can be handled by the community aide under the direction of the physician. But the doctor must still bear the responsibility. If such concepts are not followed, it is my opinion that it will be better not to initiate a ComCare service at all. If the responsibility of the physician ends when he tells the man he is able to work or that he should take a certain number of pills, then the results of ComCare will be no better than those of Receiving Hospital Clinics. To me, there is no conceivable purpose in repeating this modus operandi.

At times, physicians will not spontaneously think of many of these functions. At other times, their attitudes will be troubled. For these reasons, the main professional structure of ComCare will be group discussions. In these, physicians will talk over the problems of ongoing patient care in terms of individual cases. These meetings will probably be necessary two or three times a week initially, and then will drop off to approximately weekly.

The structure of the sessions deserves comment. All that is required is enough room for the participants to sit and confer. At the onset, a few sessions will have to do with routine therapeutic matters. But these meetings will become increasingly devoted to the socioeconomic and cultural difficulties which impinge on the patient's capacity to cope with his life situation. These conferences are almost certainly the *sine qua non* of ComCare operations.

Concomitantly, similar meetings will be held with the Community Aides to discuss the case management delegated to them. Other such sessions will be part of the ongoing training of all ancillary personnel within the service, including nurses and technicians. With these exceptions, the clinic will operate as any other suitable medical service. The only other problem of operation, one for which I have no solution at the present time, is that there will need to be some direct relationship with the hospital so that patients requiring bed care can be transferred and can continue to be seen by their own physicians. Though this is a knotty problem, it must be solved.

There are two more considerations which should be documented. The first is that such a service must make use of black physicians to the maximum possible extent. Their presence is almost a requirement from the standpoint of the community, and should be from the standpoint of the white physicians, too. For a long time we have only poorly understood that this small but effective group of practitioners is strongly allied to us. They are the most effective force for private enterprise in the negro community, and supporting them while they support us is a mutually rewarding pursuit.

The final point in the operation of such a clinic is the question of financial reward to the physicians. Probably one of the best kept secrets in medicine is that institutions like the Medical Society of Delaware are permitted under the law to grant deferred compensation to people working for them. If the physicians involved in ComCare were to receive part time compensation on a deferred level, these funds could be placed in trust without first being taxed. The trusts are permitted to buy, say, I.B.M., and no significant tax is levied against the holding until withdrawal. Then, especially if it is after retirement, the entire accumulation will be subject to tax, but much of it will be at the lower long-term capital gain rate. The significant point is that

Continued on page 69

STREPTOCOCCAL PHARYNGITIS

Part II – A Comparison of Techniques for Detecting Group A Streptococcus

• The throat culture mailed to the State Laboratory in the proper mailing container, is as reliable as direct office plating in the isolation of group A beta-hemolytic streptococcus. With the former method, the reporting of throat culture results is possible within 24 hours, an attractive feature for the practicing physician utilizing the State Streptococcal Service.

Martin F. Randolph, M.D.
John J. Redys, B.S.
Evelyn W. Hibbard, B.S.

The need for throat cultures to separate streptococcal from non-streptococcal pharyngitis and thus reduce the unnecessary use of penicillin therapy is obvious. The studies to be discussed in this part of the paper were undertaken to demonstrate to physicians that the state streptococcal service offers reliable identification of the streptococcus even though the swabs may be delayed in arriving at the laboratory. Results by this state service (Connecticut) were compared with results of immediate plating in an office laboratory. In addition an evaluation of a rapid streptococcal grouping by the fluorescent antibody (FA) procedure on smears made directly from the throat swab in the physician's office was undertaken. Such a procedure might allow the State Laboratory to report results within 24 hours and thus encourage wider use of the service.

Laboratory Methods

A throat culture swab was taken for immediate inoculation on 5% sheep's blood agar plate. A duplicate swab was placed in a special silica gel mailing kit and sent to the State Laboratories on the same day. Most specimens reached the laboratory overnight and were processed on arrival. An unknown number of cultures taken on the weekend suffered an additional one to two day hold-up in the mail. Steps employed in the processing of specimens at the State Laboratories are presented in Table I.

For the direct smear study, the throat swab was first used to prepare a 15mm circular smear on a plain glass slide previously cleaned with 95% alcohol and flamed. The smear was flame-fixed and placed in a metal holder; the swab was placed in the silica gel mailing kit. Both specimens were mailed together in the same envelope to the State Laboratories. Office and State Laboratory cultures were graded 1+ to 4+. Isolated colonies were grouped either by FA or the Lancefield method. Certain isolates were typed by the Lancefield method. Disc sensitivities to penicillin and to 7-chlorolincomycin were routinely done in the office laboratory. Follow-up throat cultures were repeated in duplicate in my laboratory and in the State Laboratories at weekly intervals for 30 days and again at 60 days. An FA examination with group A reagent was done on all the specimens received at the State Laboratory although this is not the usual practice. Instead, this examination is performed routinely, as a labor-

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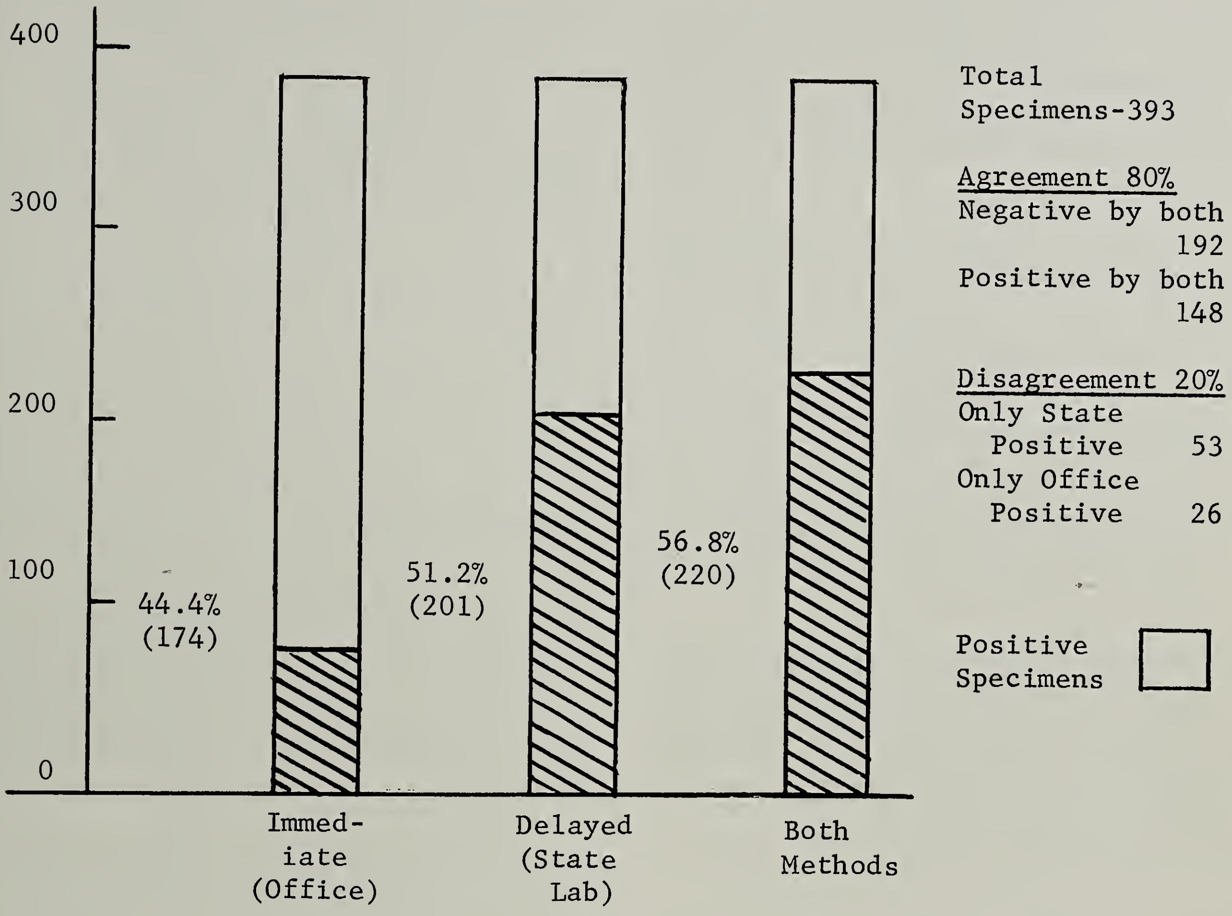
This paper was presented at the Infectious Disease Symposium, Wilmington Medical Center, May 1969.

Martin F. Randolph, M.D., F.A.A.P., F.A.A.A.S., is a practicing pediatrician in Danbury, Connecticut and is associated with the Departments of Pediatrics and Epidemiology, Yale University School of Medicine; John Redys is Supervising Microbiologist, Connecticut State Department of Health; Evelyn D. Hibbard is Assistant Director, Division of Laboratories, Connecticut State Department of Health.

TABLE I

IMMEDIATE OFFICE CULTURAL METHOD COMPARED TO A DELAYED MAIL-IN METHOD FOR THE ISOLATION OF BETA HEMOLYTIC STREPTOCOCCI



and time-saving expedient, only on specimens showing hemolytic streptococci on blood plates. The smear made in the physician's office was also examined after fluorescent antibody staining.

Results

Comparison of Immediate and Delayed Cultures

The number of cultures containing group A streptococcus in the immediate office cultures was compared to the number by delayed cultures on 393 patients (Figure1).

Beta hemolytic streptococci were found in 174 (44.4%) of the specimens which had the supposed advantage of immediate culturing whereas 201 (51.2%) of the specimens on which culturing was delayed due to mailing were found positive. A total of 220 (56.8%) were positive if both methods were considered. Agreement between both methods was 80%. A large number of the specimens in which disagreement occurred contained relatively small numbers of hemolytic streptococci. This experience is not inconsistent with that of Saslaw who found that approximately 25% of hemolytic streptococci failed to appear on one or the other of two plates used in their comparison to resolve some of the vagaries of the streptococcal culture methods.[1] The results convincingly refute the necessity for immediate plating or maintaining the swab moist before plating, as is still the view upheld by authoritative sources.[2]

Furthermore, the effectiveness of the silica gel transportation kit is clearly evident. It is well to emphasize, however, that a previous

TABLE I

LABORATORY PROCEDURE FOR THE ISOLATION AND IDENTIFICATION OF GROUP A STREPTOCOCCI

1. Swab is removed from silica gel packet, streaked onto a sheep blood agar plate, and then placed in Todd Hewitt broth; swab remains in Todd Hewitt broth during incubation.
2. Both broth and blood plates are incubated at 35°C overnight; broth is incubated aerobically; blood plates are incubated in anaerobic jar under 90% N_2 —10% CO_2.
3. Blood plates are examined for evidence of beta hemolytic streptococci.
4. Based on the examination of the blood plates, corresponding broth cultures are selected for examination of group A streptococci by the conventional FA method.
5. If the first FA examination is negative for group A, growth on plate is reexamined by FA once again by: a) smear of the growth from the blood plate; b) two hours broth from growth on plate; or c) overnight broth from growth on plate.

study pointed out that effectiveness was predicated on rapid drying of the swab.[3]

Direct Smear

The potential of the direct slide test for detecting streptococcal pharyngitis is enormous in offering the prospect of even greater economy, simplicity, and rapidity than is presently possible with the combined culture-FA modifications almost universally employed. The most detailed study on reliability was presented by Rauch and Rantz in 1963,[4] but no one seems to have adopted the measure for routine use, probably because of the equivocal results when specimens did not contain an abundant number of group A streptococcus. In view of our newer knowledge regarding the preparation of FA reagents and staining procedures, amid a controlled streptococcal study, an unusual opportunity to measure once again the reliability of such a test presented itself.

For this study a slide-smear and swab were collected concurrently and mailed to the State Laboratory. Conventional, cultural and FA methods were employed soon after arrival. A number of staining-processing modifications have been tried to date. As yet, none have been found which can be regarded as fully satisfactory. Examination results of 144 duplicate specimens are presented in Table II.

Despite some initial problems with nonspecific staining and fluorescing coccus-like artifacts, which at times caused us to falsely label a specimen as positive, results are encouraging. It will be noted that in Category II, (streptococcal infection probable) where the biggest measure of success was achieved, 25 of the 32 specimens positive by culture were also positive by slide. The experience in Category I (streptococcal infection possible) is regarded as less successful in that in only 13 of 23 specimens, positive cultures were positive by slide. In Category O (streptococcal infection unlikely) only 2 of the 9 culturally-positive specimens were found positive by the slide method.

While some of the slide positive but negative culture results may be due to the presence in the specimen of non-viable group A streptococci, more likely the majority of the discrepancies in this direction were errors of commission. Added experience in recognizing and ignoring fluorescing artifacts and further modification in reagents and procedures should help resolve this problem. A fact particularly apparent even in this limited study, is that fluorescing cells are not abundant on the slide even when parallel cultures show a large number of colonies. A solution to this problem would advance the cause for the direct-smear examination significantly.

Discussion

The throat culture mailed to the State Laboratory in the proper mailing container is as reliable as, if not more reliable than, its counterpart in the office or hospital laboratory.[3] The child with a simple sore throat and no rheumatic history can safely wait two to

TABLE II

RELIABILITY OF THE IMMUNOFLUORESCENCE METHOD FOR DETECTING GROUP A STREPTOCOCCI IN DIRECT SMEARS

Category 0 (40 Cases)
Streptococcus Unlikely

Slide + Cult. +	Slide + Cult. -	Slide - Cult. +	Slide - Cult. -
2	1	7	30

Agreement: 32 (80%)
Slide failed: 7 (17.5%)

Category I (59 Cases)
Streptococcus Possible

Slide + Cult. +	Slide + Cult. -	Slide - Cult. +	Slide - Cult. -
13	6	10	30

Agreement: 43 (73%)
Slide failed: 10 (17%)

Category II (45 Cases)
Streptococcus Probable

Slide + Cult. +	Slide + Cult. -	Slide - Cult. +	Slide - Cult. -
25	2	6	12

Agreement: 37 (82%)
Slide failed: 6 (13.5%)

three days for the results of the culture before starting antibiotics. Catanzaro, in 1954, demonstrated in a controlled study that adequate penicillin therapy aimed at eradicating beta hemolytic streptococci from the throat would prevent primary attacks of acute rheumatic fever even if delayed as long as nine days after the onset of pharyngitis.[5] However, as a practicing physician, mindful of parent-pressures, reporting of bacteriologic results within 24 hours would be desirable. Our accuracy in this preliminary experience is encouraging; the prospect of a more rapid streptococcal identification by immunofluorescent methods on direct clinical specimens is good. Technical difficulties, eg, non-specific staining, back-ground fluorescence, numbers of organisms on the smear, artifacts which resemble streptococcal cells, can be resolved allowing greater accuracy, perhaps even surpassing the cultural method, which appears at present to be more sensitive.

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ACKNOWLEDGEMENT

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Part III will appear in the next issue of the Journal.

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TASKS FOR THE TOUGH MINDED

The tasks of social change are tasks for the tough-minded and competent. Those who come to the task with the currently fashionable picture of passion and incompetence only add to the confusion.

John Gardner

RUBELLA CONTROL MEASURES IN DELAWARE

• With the licensure of the rubella virus vaccine, its use in the control of this disease and the prevention of birth defects secondary to rubella has become of great importance. This article suggests methods by which the private and public sectors of medicine can join in an effective control program.

Edward F. Gliwa, M.D.
Richard M. Gunn

Rubella, and more specifically the congenital abnormalities resulting from rubella infection, have long posed a serious public health problem. Since Gregg's observations linking maternal rubella infection to congenital malformations in children, the pathology of the disease and its effect on the embryo and fetus have been convincingly documented.

The last national epidemic of rubella occurred in late 1964 and early 1965. In commenting on the extent of congenital rubella resulting from this outbreak, Dr. Louis Z. Cooper, Assistant Professor of Pediatrics at New York University, claims that ". . . despite the widespread practice of therapeutic abortion for rubella in the first trimester of pregnancy, a conservatively estimated 30,000 children (in the United States) developed rubella-associated birth defects as a consequence of the epidemic of 1964."[1]

In Delaware, our data indicate that the number of children with diagnosed congenital hearing problems increased 55% over the average of the five years immediately preceding the epidemic. Authorities estimate that there are at least 45 children in Delaware with congenital hearing defects that, in all probability, resulted from this outbreak.

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Truly accurate data are not available on rubella incidence in Delaware. Until July 1, 1968, the disease was reported only by number with no special epidemiological documentation. These data are therefore felt to be of questionable significance. The yearly average reported case rate per 100,000 for the past twenty years has been approximately 34. However, the range during this period of time has been from a low of 1 to a high of 163 cases per 100,000 during the 1964 epidemic.

Since July of 1968, the State Board of Health has required more comprehensive reporting in communicable diseases, particularly emphasizing rubella, measles, and mumps. In 1968, there was increased reporting in each of these diseases over the previous year. Also, we have noted an increase in reported rubella infections to the State Health Department for the first six months of 1969. During this time-period, we had 189 cases for the year as compared with 73 at this same time in 1968.

Figure I presents Delaware's rubella rate per 100,000 since 1941. The disease's cyclic nature is obvious. For the nine years following the huge epidemic in 1943, there were very few cases reported. Then, in 1953, 1958, and 1961, outbreaks of lesser intensity occurred, each followed by three- or four-year-periods of greatly reduced morbidity.

It is assumed that this generally low case rate allowed the accumulation of a sizeable backlog of susceptibles which set the stage for the 1964-1965 epidemic. This sharp rise in cases reported, of course, has been followed by several years of low incidence, which once again is allowing the build-up of a sizeable susceptible population. It is our estimate that this next outbreak may occur as early as 1970 or as late as 1973. Authorities at the National

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Mr. Gunn, B.A., is a Public Health Advisor, National Communicable Disease Center, assigned to Delaware State Board of Health.

Communicable Disease Center also agree that a nationwide epidemic may occur during this time period. In all likelihood, the intensity of this outbreak will not be as severe as the 1964-1965 epidemic. However, if no preventive efforts are effected, it will present a serious health threat.

There is, however, one new factor which may well alter the natural course of the predicted increase. This factor is the new rubella vaccine licensed in June of 1969.

Vaccine Now Available

The vaccine itself appears to be a very effective antibody-producing agent. Although less antigenic than the natural disease, titers have not diminished over a three-year period. The eventual duration of protection afforded by this vaccine is, however, unknown. In the field trials, approximately 95% of the susceptible vaccinees developed antibodies. The vaccine-induced immunity has afforded protection against natural exposure and artificial challenge. Reactions to the vaccine are very rare among pre-pubertal children with the only significant reactions being observed in adult women. In the adult susceptibles vaccinated, the primary reactions were lymphadenopathy, arthralgia, and arthritis occurring from two to four weeks after inoculation. These reactions are of a transient nature and appear to have no sequelae.

Now that the vaccine is available, rubella control and the prevention of the congenital defects due to rubella would seem to be within our immediate grasp. However, there are several considerations in the use of the vaccine and its application to broad-based immunization programs that must be recognized before this goal can be achieved.

The public's first impression is to say, "Why not prevent the congenital maternal and fetal rubella by immunizing all women of child-bearing age?" There are three problems in this approach. The first is that the vaccine's effect on the fetus is unknown, and a woman might unknowingly be pregnant at the time of vaccination. The second is that, as mentioned before, reactions to the vaccine are significantly greater in post-pubertal females. Finally, vaccinating school children is a more efficient method of interrupting disease transmission than vaccinating adult women. This is illustrated by the fact that school children are responsible for most outbreaks. According to National Communicable Disease Center statistics, 70% of first graders are susceptible while 80-90% of adult women have already had the disease.

The first problem is emphasized in the Public Health Service Advisory Committee for Immunization Practices' pre-licensing statement for the new vaccine. The statement reemphasizes that pregnant women should not be given the rubella vaccine as its effects on the unborn child are not known. For this reason the committee advises against routine immunization of adolescent girls and adult women because of the risk of inadvertently administering the vaccine during pregnancy. The vaccine is to be given to a woman of child-bearing age only if the possibility of pregnancy is nil for at least two months. A second reason for not immunizing pregnant women is that since congenital anomalies occur in three percent of all births, their fortuitous appearance might be misinterpreted as being vaccine-related.

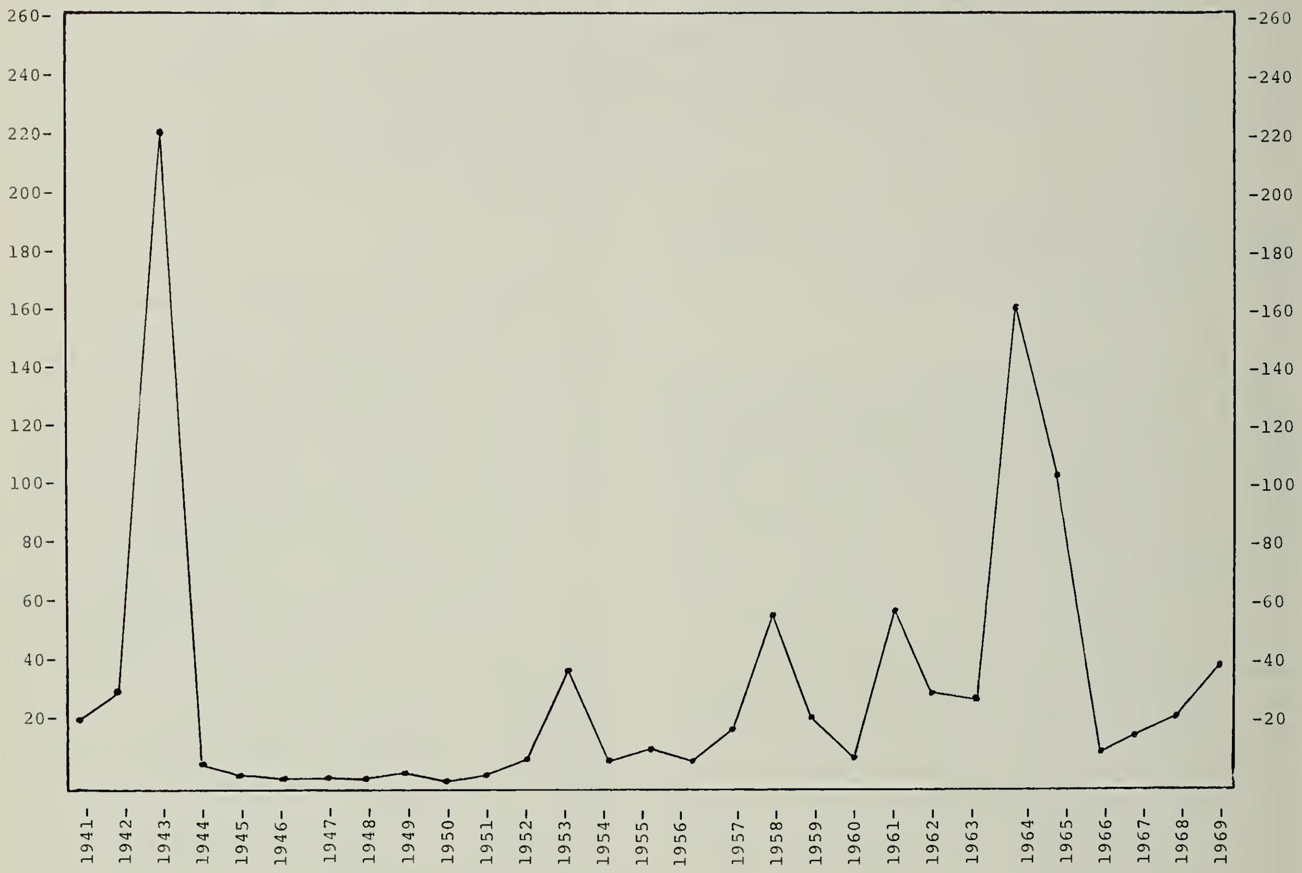
The committee also elaborates the steps which must be taken in immunizing a woman of child-bearing age. Their conclusion is that such immunization must be handled on an individual basis.[2]

This raises the question, How does one deal with such a vaccine on a mass basis? Since rubella is a childhood disease, and since it is spread primarily in groups of collected pre-pubertal susceptibles, the most effective method of control should be focused on this age group. Our first objective is to decrease the amount of rubella virus circulating in the population by vaccinating children, the primary reservoir of infection. This, hopefully, will prevent these children from spreading the disease to adult female contacts who might be pregnant.

The effectiveness of this program depends on the dissemination of this knowledge to the public so that this plan, which at first

FIGURE I

Delaware Rubella Case Rate per 100,000 for 1941 through 1969



glance appears somewhat circuitous, will be generally accepted. Once the public is aware of the necessity for this approach, the only remaining problem will be distributing the vaccine and insuring its appropriate use in the pools of susceptibles throughout the community.

Because of the number of childhood exanthems which exhibit manifestations resembling rubella, a relatively high inapparent infection rate, and the fact that many are not seen by a physician, a history of rubella infection is not reliable enough to exclude a child from vaccination. The general course to be followed then should be the immunization of all children from one year of age to puberty. The primary emphasis is being placed on immunizing young preschool and school children, who are primarily responsible for the spread of rubella virus. These groups include kindergarten, early elementary school, and groupings of preschool children such as Headstart, nurseries, and day-care units.

As soon as vaccine is available in sufficient quantities, this program should be reinforced by vaccination of all children from one year through puberty as a part of the basic immunization series. This practice should build up a population of immune children which will help curb the spread of the disease.

The Board of Health, operating on a limited supply of vaccine from state and federal sources, must set priorities for its vaccine use in order to get the vaccine to the highest risk children. For this reason the following priorities have been developed. The first children to receive the vaccine were collected groups of preschoolers, such as from Headstart and day-care centers. Kindergarteners and early primary school children will next be immunized as vaccine becomes available.* Finally, as the vaccine supply increases, consideration will be given to immunizing children in the remaining elementary grades.

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* This phase of the program is now underway. Most preschool groupings have been completed, and the kindergarten and first grade immunizations have been started.

We will begin our efforts in lower income areas, as they are the least likely to receive vaccine from a private source.

At this same time, the private sector of medicine will be encouraged to immunize all pre-pubertal children and to include the rubella vaccine in the basic infant immunization series. The Infant Maintenance Program, the State Board of Health's direct mail surveillance system to encourage early immunization, will be enlarged to include and emphasize rubella immunization. Eventually, those children who attend the Board of Health's well-child conferences will be given the vaccine as a matter of practice. In general, the population will be educated to the necessity of immunization against this disease.

One problem which will arise in this education effort is the confusion between measles and rubella in the general population. In some areas of the country, no differentiation is made by the public between the two diseases; and in others, confusing local nomenclature clouds the issue even further. An effective educational program is needed to establish the difference between rubella and measles in the mind of the general public. A failure in this area could greatly impair the eradication efforts against both diseases.

This problem and the problem of convincing the public that the children must be immunized to protect their mothers are two obstacles which must be overcome before general community-wide acceptance and cooperation can be achieved and an effective rubella control program can be mounted.

When the high-risk priority populations of pre-pubertal children in the State have successfully been immunized, then community-wide campaigns patterned after the poliomyelitis and measles immunization programs may become feasible to immunize those children who have not previously received the vaccine.

The completion of the programs described above will be, however, only a beginning. After achieving these goals, further steps will have to be taken. Careful surveillance of rubella and congenital defects secondary to intrauterine rubella infection must be maintained. In order to evaluate the effectiveness of the vaccine and to control any local outbreaks which may occur, improved diagnosis and reporting procedures must be practiced. Finally, continued emphasis on the importance of early rubella immunization must be stressed, by both private and public medicine, in order to successfully eliminate rubella, and, more importantly, defects due to rubella infection of mothers during their pregnancies.

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MEDICINE IN THE INNER CITY

Continued from page 61

if these funds are properly handled, they can become the most effective income the physician earns.

A very high percentage of the residents of the inner city are now protected by Medicare, by the Blues, or by private carriers, or earn enough money themselves to pay for medical care. Rather large amounts of money can be expected to pour into the service. If these are properly handled, participation in ComCare will represent little or no material sacrifice on the part of the physician.

I hope I have suggested ways in which we can deal effectively with the inner city health care problem: by acting as becomes our traditions, by extending proven and traditional techniques of medicine, and by holding the whole procedure within the private sector of the economy. Steps must be taken soon to answer the problem. If we as physicians do not have the capacity to adapt to the needs, then we can have all the new brick in the world, all the cleanliness and godliness, all the funds and financing, and we will still repeat the filth and failure that has characterized inner city institutions until now.

Gentlemen, it is our move.

Special Reports

THE DELAWARE ADOLESCENT PROGRAM, INCORPORATED:
Progress Report

Presented to the Delaware Association of Medical Assistants — September, 1969

The Delaware Adolescent Program, Incorporated, which we call DAPI, is a comprehensive program for the unwed teen-age mothers in Wilmington. There are three broad areas of service: medical services, social services, and education. The medical services include prenatal care, hospital care, post-partum check-ups to the mothers, newborn care in the hospital, and well-baby care for the first year after birth. All of these services are offered to DAPI girls in one location.

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How did DAPI happen? It developed as a result of the efforts of a group of people interested in the same problem and determined to do something about it. The reasons for developing this type of health center follow:

1. A school-aged girl should not be cared for in a regular prenatal clinic. Her problems are so much different and usually so involved that the average prenatal service is not equipped to provide adequate service beyond competent obstetrical care. This group of girls, particularly the younger ones, still have the physical and emotional problems of other girls their age, and need special consideration.

2. This is an age group well known as more likely to have difficulty in pregnancy and delivery, and to have babies who are likely to be ill, to have congenital problems, to be premature, or to die before the age of one year.

3. On-going education during pregnancy will increase the return of girls to school after the baby is born. Even if they do not return, they will still be better able to care for their children and less likely to repeat their original behavior pattern.

Many successful programs of this type have been developed in other cities, namely, Chicago, New York, Washington, Syracuse, and others. But the real impetus for a program in Wilmington came from the people who recognized the need for such a program here in our own community. My own role developed as a result of my service as a physician in a well-baby clinic at the Kingswood Community Center for over 15 years. I was struck by the fact that in recent years there was a tremendous increase in the number of young unwed teen-age mothers who brought their babies to the clinic for check-ups and immunizations. Moreover, I was truly startled to realize that as I had attended this clinic for so many years these mothers were girls whom I had cared for as infants. Over the years I had felt that I was giving especially good care, but it had obviously not been enough. Then when our Adolescent Clinic opened at the Delaware Division, we began to see young girls coming in, frightened and anxious because they were pregnant or thought they might be. Where could we send them — not only for medical help, but for guidance and support during their months of confinement? The only facility available to them was the Obstetrical Clinic of the Wilmington Medical Center. Here, to be sure, they could get excellent obstetrical care. But it was apparent that these girls needed more than that.

About this time in my thinking, I was fortunate to meet Dr. Catherine Middleton, the new director of Maternal and Child Welfare for the State Board of Health. Dr. Middleton had recently written her thesis for her master's degree in Public Health on the problems of the unwed teen-age mother. We shared our concern and ideas about how these girls might be helped. We soon discovered that another person had already taken the bull by the horns and proposed a program in Wilmington along the lines of the New Haven clinic. This person was Mr. William Drake, a social worker employed by the United Fund of Delaware. And so, in the summer of 1968, the three of us worked out a plan for a program for the unwed teen-age mother in Wilmington.

We soon found strong support from several other people. Dr. Marvin Andersen agreed to develop the obstetrical part of the program. Mrs. Imogene Geoghegan, a member of the Budget Committee of the United Fund of Delaware and a member of the Junior League, took on the task of finding funds for our program. Mrs. Lulu Mae Nix, our present Executive Director, was at the time a teacher at Brandywine Junior College. Aware of the educational needs of these girls and deeply concerned about the disadvantaged members of her own race, she agreed to develop the educational aspects of the program. And so, with this nucleus of people working feverishly all that fall, the DAPI program evolved.

Certain Limitations

It was our decision to make every effort to have this a model program, and to do so, it was necessary to have certain limitations. We decided on an age limit of 19 years and under, and to insist that it be a first pregnancy. We also initially limited the first year's program to 50 girls and made a geographical limitation to the northeast section, ie, in the area of the Kingswood Community Center. We planned a three-pronged attack on the problem: medical care, social service, and education.

Support for the medical part of the program came through the State Board of Health. Dr. Middleton arranged for the prenatal clinics to be held once a week, post-natal care and well-baby clinics to be held once a month. She also arranged for fees for clinic physicians, medical supplies, a consultant in the field of nutrition, and State Board of Health nurses to attend these clinics.

Dr. Middleton also offered us the services of a part-time social worker to take on the job of individual counseling of the students.

In the third area, that of education, we had a harder row to hoe. There was a long-standing directive that the principal of a school could suspend any girl as soon as it was discovered that she was pregnant. Moreover, she was not permitted to return to school for one full year after the delivery of her infant. As a result of this policy, girls were hiding their pregnancies. Fortunately, for us, there has since been a change in the state policy regarding pregnant students. A pregnant girl may now remain in school for at least five months during her pregnancy and is permitted to return to school six to eight weeks after delivery with her doctor's permission. We fully expect the Wilmington Public School Board will adopt a similar policy in the near future.

DAPI's educational goals are somewhat simplified, in that all we have to do is provide a basic education, keep the girls up in their English and math courses, and provide individual tutoring in their own fields of specialization. Mr. Calvin Cleveland, the Director of Secondary Education for the Wilmington Public Schools, offered us a teacher from the Adult Education Center and made available materials that are used in this program.

Further support in the field of education came from the Junior League, who provided us with volunteer teachers and supervisors for study periods. Thus as we began, we were highly encouraged by the cooperation of all the agencies I have mentioned. However, funds were still needed for the administration of the program and for housing. The Junior League provided us with a grant of $23,000 in January of 1969.

By this time we were all set to go, except for the problem of housing. We had hoped to be able to use part of the Kingswood Community Center for our program, but their facilities were all being used for various programs, such as Head Start, recreational programs, and day care. Fortunately, we were able to convince the Wilmington Housing Authority that our program was sufficiently needed by the community as a whole for them to rent a two-bedroom apartment at cost in the housing project for the DAPI program.

On the 20th of February, 1969, we opened our doors. Only three girls came the first day. We were a little discouraged by this, but very rapidly their numbers increased to fifteen. Credit for our first referrals goes to many cooperating agencies, such as The Visiting Nurse Association, Planned Parenthood, the Girls Club, state nurses, school nurses and counselors and our own Neighborhood Aide. Fifteen was the limit set by the Department of Education under the Adult Education Center program for one teacher, but as our waiting list rapidly grew, we were able to persuade Mr. Cleveland that we needed a second teacher. A second class of another fifteen girls started by the end of March.

Still our waiting list grew, and it was apparent that if we wished to increase the program, we would need more space, more funds, more time, and more help. About the time we were feeling the squeeze, the Adult Center of Education building at 511 West 8th Street offered us several rooms in their old school building. About the same time, we learned that the legislature had passed the bill granting $50,000 to DAPI. And our educational program was now extended through August.

Until the present time, Dr. Andersen has delivered all the DAPI babies as private patients, and I have taken care of them in the newborn nursery. Three more pediatricians have offered their services to assist in the pediatric part of the program, and Dr. Andersen feels that he may be able to get further support from his colleagues in obstetrics. The Board of Education has agreed to allow us to accept a third group of fifteen girls.

This is where we stand today. Of the 30 girls that have already been served by the program, 12 returned to their own schools in September. Three girls graduated, having completed their high-school requirements in the DAPI school. Fourteen girls are coming back to DAPI until they deliver or until their babies are old enough for them to be permitted to return to their regular school. Our present enrollment is 45 girls, our limit, and once again we are starting a waiting list.

The classes currently being offered, in addition to the basic education program, are courses in black history, typing and bookkeeping, sewing, nutrition, sex education and a health education course, including preparation for delivery which is being given by a nurse from the University of Delaware. Girls who need it also receive individual tutoring. An additional service now being offered is day-care for infants of mothers in school. Dental services have not yet started but are well along in the planning stages, and our psychological services include group counseling for an hour and a half a week by three trained psychologists and individual testing for class placement and achievement tests.

Wht does the future hold for DAPI? This is an exciting but a frightening question. It is exciting because the response has been so tremendous. We have been operating for only six months, and here we are with 45 girls and more wanting to enter the program. The achievement of the girls has been remarkable. Those who entered in February were tested in June and found for the most part to have increased their reading ability by one full year. I would like to comment, too, on the dedication of these girls. These are girls who were potential drop-outs, and who probably would never have completed their education. We have found that attendance is excellent. Classes are more than 85% full each day compared to 60 to 70% attendance in the Wilmington public schools. The girls continue to come to school until their delivery. Many have been in school the very day that they have gone to the hospital and delivered their babies. Moreover, they return one or two weeks after delivery, knowing they can leave their babies for a while in the nearby nursery while they go on with their schooling.

Medically, we have felt rewarded, since in this high risk group we have had very few serious problems. Of the 18 girls who have delivered since the program started, only one girl developed toxemia. Three of the babies have been premature, but all of these infants weighed over four pounds at birth and have done well since delivery. These data are not statistically significant, but we are hopeful that the rest of our girls will do as well with the special medical care they are receiving at DAPI. These are the exciting aspects of DAPI.

The frightening ones are these: How can we possibly care for all the girls that want to enter the program? Is the community going to respond to the need? Do we have enough medical manpower, social service manpower, and educational manpower to give this high quality care to all the girls who need it in our state? I sincerely hope so, and I look to all of you to lend your support.

MARJORIE J. MCKUSICK, M.D.

Dr. McKusick is Chairman of the DAPI Board of Directors. For further information regarding DAPI, contact Mrs. Lulu Mae Nix, Executive Director, or write to DAPI, 511 West 8th Street, Wilmington.

BIOMEDICAL ENGINEERING ON MULTIPHASIC SCREENING

Sponsored by the Engineering Research Foundation Conference

Deerfield, Massachusetts, August 18-22, 1969

The preferred new nomenclature Automated Multiphasic Health Testing (AMHT) with its deletion of the word "screening" is significant since the word screening may be misused and misunderstood, especially by the patient. The discussion at this meeting of the importance of AMHT and its place in the present system of health care focused on some of the differences in the concept of the scope of multiphasic screening among private practice, governmental health services and industries. The clinicians present emphasized that automated multi-phasic health testing could supplement and save time in obtaining the traditional history and physical but was not really a substitute for traditional methods as some of those less clinically oriented implied. In the new center proposed by HIP, the prepaid health system in New York, about one-third of those screened will probably not see a doctor. Therefore the proper follow-up for screenees (the management of the non-patients) and the significance of borderline abnormalities need clarification.

Unfortunately there is little concrete statistical evidence of the value of either the conventional examination or automated testing schemes. Even the Kaiser program which has the longest experience of all the automated "screens" has only been in operation for three to four years. Therefore it is too early to judge its effectiveness, eg, in the prevention of vascular disease, as a result of findings noted in its test programs.

The criteria for analyzing "screening" results were reviewed, including the concept of sensitivity, the ability to pick out most cases of a disease from among a group despite some false positives. (Specificity is the capacity to pick out those who truly have the disease; if specificity is poor there may be a large number of false negatives.) Precision and replication (the ability to get consistent results) are necessary to evaluate accuracy. It may be very difficult to determine what is normal. Averages seem to vary from group to group in various areas of the country. Minor variations in technique, even with the same instruments and same procedure, may result in a slight change in the range of results. The problems of normal limits, borderline values, and methods of reporting them need more evaluation.

Other problem areas include the rational selection of a particular test, the "one shot" approach to screening, payment sources for screening, the effect of low yield results in disease control, the availability of follow-up health care, the psychological problems associated with the anxious patient who has borderline results, and the need for certifying standards and establishing safety procedures in the screening process.

It was instructive to see the wide range of industry which was interested in the program presented by the Engineering Research Foundation. Some were interested primarily in the instruments, some in automated equipment, and some in systems planning, including hospital inpatient and outpatient services. Others were there as consumers of services or representing government research and development activities, especially those established under the Department of Health Education and Welfare's new division of Health Services, formerly part of the U.S. Public Health Service.

The government has established four demonstration multi-phasic testing centers in addition to helping with the Kaiser center in San Francisco. The government-sponsored centers are for demonstration and development purposes and are not intended to be a new government service for all. Because of the problem of acceptance by the public, especially the under-privileged at Brookdale in New York, they have had to bus people to the centers in groups in order to get acceptance by those unfamiliar with preventive medicine. In spite of the obvious lack of specific data, except for that furnished by Dr. Collen from the Kaiser Plan, there seemed to be little doubt that the push is on for more multiphasic testing centers. Dr. Collen pointed out that his costs were down to about $23 per patient, with a potential for lowernig it to $19 or $17 if he could operate at full capacity of 40,000 patients per year. In spite of our inadequate knowledge of costs and benefits the concept of Automated Multiphasic Health Tests is catching on and looks as if it may be more than a transient phenomenon.

There is a United Nations committee working on this problem. It has published guidelines for development which stress that in addition to the traditional physical screening, questionnaire, and biochemical testing, psychological stress tests be performed. It was pointed out that many commonly found ailments, especially those for which treatment may be effective, are in the field of emotional illness.

The Workshop on Federal and Industrial Interrelationships recommended that industrial and users groups should be represented on government councils concerned with research and development of the needed services. The "Partnership for Health" amendment to the Comprehensive Health Planning Act promises an opportunity for industry and other non-governmental groups to participate in research and development of health services but industry may have to take the initiative. So far very little has been done because of lack of government funds for new programs.

It was agreed that Automated Multiphasic Health Testing cannot stand alone and must become part of an integrated health care system before technical advances in instrumental and systems planning can become effective. Unless automated equipment can pay its way and prove itself a time saver for professionals and thus widen the scope of health services, its potential cannot be realized. In turn the physician will have to adjust to a "systems approach" with its resultant change in the practice of medicine and a greater focus on preventive medicine. Methods of assuring that the important items from the screen, physician records, and hospital data can be flagged, integrated and identified, are necessary in order that the physician providing the care is not swamped with a forest of insignificant facts.

Whether or not AMHT gains widespread acceptance, there is little doubt that the engineering "know-how" responsible for the proliferation of diagnostic equipment and improved systems methods will significantly affect the future practice of medicine and the health care system. The industrial strengths of the newly arising industrial medical complex have to be wisely used by the business leaders of the country. The hope is that government can act as a resource body to stimulate innovative ideas, and help to evaluate end results while insuring that public interest is served by the various bio-engineering instruments and plans. Clinicians still have the opportunity for leadership to insure the most pertinent and personal use of automatic instruments and computers for their patients. It will take physicians well trained in the concept of total patient care, who know something of preventive medicine and are knowledgeable in computer technology.

Hopefully some of those now in medical school and in postgraduate training programs will recognize the challenge and prepare for the future.

Robert W. Frelick, M.D.

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"Man can learn nothing unless he proceeds from the known to the unknown."
C. Bernard

Editorials

CATCHING UP WITH THE TIMES

It is a recognized fact that we in Delaware have fallen behind the times in making comprehensive care available for all segments of the socio-economic scale. But it should be noted that beginnings have been made and that they have all been made by the "private segment" of our society: specifically, the Wilmington Medical Center and a small group of private practitioners. Since October of 1967, the Wilmington Medical Center has been instrumental in the founding of the two programs: the program now known as the Southbridge Medical Advisory Council (SMAC), and a Community Health Coordinator Program.

It is also extremely important to note that in the Southbridge instance, a group of private practitioners accepted the challenge of providing comprehensive health care in a "ghetto community" and except for board membership have completely supplanted the Wilmington Medical Center in the establishment of the program, working directly with the community residents.

The Community Health Coordinator Program of the Wilmington Medical Center (a Center employee has an office in the West Side Conservation Association building at Third and Madison Streets) has been a giant step forward in the community in the provision of comprehensive health care.

In addition, it is noteworthy that ongoing programs of the State Board of Health, the Department of Mental Health, and others are getting more interest, support and attention from the "private segment."

However, there remain two extremely important limiting factors. One is the shortage of the physicians to perform the care required plus the failure of "the system" either to have provided doctors' assistants or to have established team concepts in care in order to spread the professional judgment in such a way as to provide care to greater numbers. The second is the fact that government is exerting almost exclusive rights in the provision of ghetto medical care by holding the purse strings in the underprivileged communities.

Though initial strides in innovative programs have been taken by the "private segment," there *is* still much to do and much re-education needed of the physicians of our State. They should take to heart the paper on page 57 by Dr. Alexander Hirschfeld.

William H. Duncan, M.D.

RUBELLA VACCINE: Seventy-seven Times Through the Green Monkey Kidney

In 1941, rubella, previously regarded as being a benign illness, was demonstrated by Gregg[1] to produce congenital defects in infants of mothers who contracted the disease in the first trimester of their pregnancy. The observations of Gregg were confirmed by several investigators, and the incidence of fetal abnormalities with maternal rubella in the first trimester was found to vary between 15.9%[2] and 59%.[3] The experimental transmission of rubella in human volunteers increased our knowledge of the natural history of this disease.[4] The important advance which has made possible the now available vaccines occurred in 1962 when the rubella virus was propagated in tissue culture.[5,6] This made it possible to study properly the effects of the rubella epidemic which occurred in 1964 and 1965 and expanded our knowledge of the congenital rubella syndrome. The next important step in our knowledge of this disease was improvement in antibody testing, and with the introduction of hemagglutination inhibition test[7] in 1967 there was available a rapid, reliable test of immunity and one which facilitated diagnosis of the disease.

The clinical manifestations[8] of congenital rubella are now well recognized. The major defects include deafness, heart disease, cataracts, glaucoma, psychomotor retardation, and neonatal thrombocytopenic purpura. There is a high incidence of deaths in affected children. With the medical profession and the public fully aware of the consequences of congenital rubella infection in the late '40's, and '50's, the disastrous sequelae of the epidemic of 1964-65 made very clear the need for a rubella vaccine. Following up their isolation of the rubella virus in 1962, Parkman and Meyer[9,10] attenuated the rubella virus and described the first production of experimental live virus vaccine clinical trial in 1966. The strain used by these investigators was one that had been passed seventy-seven times in African green monkey kidney cultures and has been referred to as high passage virus-77 or HPV-77. These workers also tested other rubella vaccines[11] which were HPV-77 viruses further attenuated in different tissue cultures including duck embryo (DE) and dog kidney (DK). Much of our knowledge of the use of the live attenuated rubella virus vaccines has come from the investigations of Meyer, Parkman et al.[11] They demonstrated that most HPV-77 vaccinees developed neutralizing and hemagglutination inhibitory antibodies after the 20th day after inoculation. Virus could be recovered from the pharynx of vaccinees by the 7th day after inoculation and sometimes as late as the 28th day. However, in contrast to the natural disease, viremia was only rarely found in vaccinees. They also found that vaccinees rarely if ever transmitted their infections to contacts. In addition to the above-mentioned rubella vaccines, Plotkin[12] has attenuated the RA-27/3 strain in WI-38 human diploid fibroblasts and demonstrated that this attenuated virus vaccine could be administered intranasally with good antibody response without significant reaction or spread to contacts. Meyer et al[11] have followed patients for three years and have found that the hemagglutinin antibodies persisted for that period of time though at a lower titer, 1:128, compared to the average titer following natural rubella of 1:1024.

The Cendehill[13] strain of rubella virus isolated in Belgium, was propagated in primary rabbit kidney (RK) cells and, after 51 passages, was considered appropriate for clinical evaluation. Prinzie found in both closed and open studies that the conversion rate varied between 95% and 98%. He confirmed the non-communicability of the live attenuated vaccine strain. Open studies have been conducted in Wilmington, Delaware,[14] in which more than 1700 children were vaccinated with the Cendehill strain with a 97.8% seroconversion and with no significant clinical reactions. The study of Cooper et al[15] has demonstrated that rash, fever, adenopathy and malaise have been insignificant following immunization of children and adults with HPV-77 DK 12, HPV-77 DE 5 and Cendehill RK 51 strains. Interestingly, however, it was shown by Cooper, as well as by others, that a significant percentage of adults who received the HPV-77 strain and less frequently of those who received a Cendehill strain, had episodes of brief arthralgia or transient arthritis with pain, tenderness and effusion. They did not observe any arthritis among children though a few did have transient arthralgia.

The article, "Rubella Control Measures in Delaware," by Gliwa and Gunn in this issue of the Delaware Medical Journal, points out the indications for and some of the problems associated with the use of the currently available rubella vaccines. They note that because of our lack of knowledge of effect on the unborn fetus, pregnant women should not be vaccinated. Also, reactions in the post-pubertal female are increased over those in school children. The general course to be followed is to immunize all children from the age of one year to puberty with especial emphasis on the immunization of young pre-school and school children since they are responsible for the primary spread of rubella virus. It is laudatory that the local efforts of the Public Health Service are being expanded to vaccinate pre-pubertal children when appropriate and to encourage private physicans to do likewise in order to remove one more infectious disease that is capable of causing either early death or serious chronic handicapping conditions later in life. The first rubella vaccine, HPV-77 DE 5, was licensed in the late summer of 1969, and the Public Health Service has published recommendations[16] for its use. A second vaccine HPV-77 DK 12 was approved in December 1969. It is expected that the Cendehill vaccine RK 51 will also be approved in the near future.

H. R.

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DAPI — When no one else will take you

The pregnant teen-ager confronts society and the medical profession with one of its most difficult and tragic problems. The social, emotional and educational trauma creates untold misery for the teen-age mother, for her family and for the father of the child as well. Moreover, adolescent pregnancies under 15 years of age have been associated with a higher incidence of toxemia, contracted pelvis, prolonged labor along with prematurity, neonatal complications and early childhood death.

In the past emotionally conditioned, invalid reasoning has delayed the establishment of services for the pregnant teen-ager; denials that the problem exists, the argument that existing facilities are readily available to pregnant women of all ages, lack of financial resources and the notion that such attention inevitably encourages sexual promiscuity have been given as ample reasons for rejecting comprehensive care for this high risk group.

There is no evidence that teen-age pregnancy is going to disappear; on the contrary, illegitimacy rates for women under 19 years have more than doubled in the last 30 years. In 1965, there were an estimated 130,000 out-of-wedlock births to women under 19. The reasons for this are obscure, although increasingly earlier maturation, the so-called sexual revolution, teen-agers in revolt, the actual increase in the numbers of young people are frequent reasons given for the rise in all teen-age pregnancies.

There is growing concern among health professionals and the community about inadequacies in services available to pregnant teen-agers. The complex, almost universally encountered problems of "children having children" require a coordinated and comprehensive effort by all members of the community. The development of the DAPI program to provide multi-disciplinary services for the young mother adds Delaware to the growing number of states who are attempting to deal realistically and progressively with the problem.

Studies of comparable programs in Baltimore, New York, Los Angeles and elsewhere suggest that these programs lower prenatal morbidity and significantly increase the chances of a healthy, viable infant at term. Moreover, the social, emotional and educational difficulties, frequently more severe, are best approached by a team of individuals. Doctor McKusick and her associates are to be congratulated for developing such a program for teen-age girls in Delaware; the ingenuity, drive and persistence necessary to develop services such as this de novo are notable. Already the response by the community has led to the program operating at its present maximum enrollment.

The DAPI program has made an impressive beginning; it needs the continuing support of both the medical community and the people of Delaware to pursue its goals. The substantive issues of primary prevention and health education most certainly will also require early attention. For the ultimate goal of such a program is to reduce the number of unwanted and unplanned pregnancies.

Dale C. Garell, M.D.*

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* Doctor Garell is the Director of the Division of Adolescent Medicine, Children's Hospital, Los Angeles, and the Executive Secretary of the Society for Adolescent Medicine.

President's Page

THE DEPARTMENT OF HEALTH AND SOCIAL SERVICES

On March 16, 1970 the second of a number of departments of State government came into existence as the Department of Health and Social Services with Albert L. Ingram, Jr., M.D. as its first Secretary.

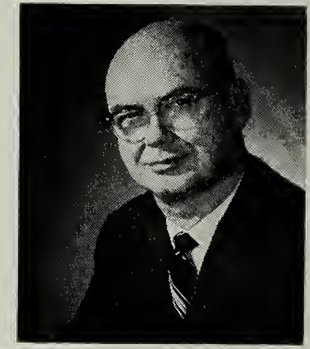
This new department brings together under Dr. Ingram's supervision and direction the previous Departments of Health, Mental Health and Welfare, and the Commissions of Adult and Juvenile Corrections and Assistance to the Aging.

The Secretary, Dr. Ingram, will appoint with the approval of the Governor, the following Division Directors:

1. The Director of Physical Health
2. The Director of Mental Health and Mental Retardation
3. The Director of Social Services, which includes Public Welfare and Aging
4. The Director of Division of Corrections
5. The Administrative Office of Medical Examiner
6. The Administrative Office of Business Administrator
7. The Administrative Office for Planning, Research, and Evaluation

Each Director or Administrative head will report directly to Dr. Ingram and will be responsible for the organization and efficient operation of his division. The cabinet type of government should facilitate constructive changes in operations within each division, encourage communication and cooperation among divisions, provide appropriate liaison and encourage innovative services.

Of greatest importance in my mind, is the new office of Planning, Research, and Evaluation. Planning will be a continuing operation, and evaluation of services provided through each division will be regularly and frequently accomplished to assure up-to-date effective health and welfare services.



Albert L. Ingram, Jr., M.D.

I believe the Governor should be commended for his choice of Secretary of Health and Social Services in selecting a physician and especially for the selection of Dr. Ingram. Dr. Ingram is a native of Delaware, who attended local public schools before entering Davidson College, Davidson, North Carolina. His medical education was obtained at the University of Maryland School of Medicine with internship at the Delaware Hospital, Wilmington, Delaware, and residency training in psychiatry at St. Elizabeth Hospital, Washington, D. C. Dr. Ingram served three years in the U. S. Naval Reserve prior to completion of psychiatric training. He practiced psychiatry in Wilmington for fifteen years before becoming Director of University Health Services at Penn State University in 1963. Dr. Ingram returned to Delaware in 1968 to serve as Commissioner of the Department of Mental Health, and he directed that department efficiently with great improvement of services until accepting his present appointment.

Most members of the Medical Society of Delaware know Dr. Ingram well. I know all have been impressed with his sincerity and quiet efficiency, his determination to provide the best possible mental health services for Delaware, and his great concern for the needs of the underprivileged. Many of us have found it a pleasure and privilege to work with Dr. Ingram in planning for the health needs of Delaware citizens.

We urge and encourage all members of the Medical Society of Delaware to support and cooperate fully with Dr. Ingram in his effort to provide comprehensive health and welfare services for Delaware through a well organized, smoothly operating Department of Health and Social Services.

Henry H Stroud

Letters to the Editor

To the Editor:

In the early nineteen hundreds two parks just west of center Wilmington were delightful, safe and picturesque areas of outdoor, almost country recreation. Before the days of air conditioning the parks, especially in the late afternoon and early summer evenings, were literally cluttered with perambulators with their infant cargo propelled by mothers or nursemaids. Tenth Street Park, the larger of the two, was popular for older children for swimming in summer and sledding in winter. Tenth Street from Broom Street to Madison Street in the winter snow was usually closed to street traffic because it was a children's toboggan run. This park was upgraded in the late 1920's and renamed Cool Spring Park because of the cool spring which is still there and probably also because this spring was part of the country estate of Caesar A. Rodney in 1814 which was called "Cool Spring."

James Tilton
1745-1822

The other park, still known as 8th Street Park, though smaller has a more strategic and originally a more majestic location since three states, Pennsylvania, New Jersey and Maryland could be seen from this hill named "Belleview" by its owner in 1760 when the population of Wilmington was 1000.[1] Later in 1792, when the population of Wilmington was 2300, James P. Tilton bought this property and renamed it "Federal Hill." This he did because he had fought long and hard for the Continental Congress to establish the new national seat of government there. The site lost by one vote in favor of Washington, D. C., which then took 10 more years to build. Tilton still wished to preserve this national connection and called his new home Federal Hill. His original house, built in 1760, and enlarged in 1802, is still the central core of the present University Club.

In 1862 the Mayor and Council of Wilmington acquired title to a part of this estate, later designated as 8th Street Park.[2] It is still owned by the Mayor and Council, not by the Park Commission now known as the Department of Parks and Recreation. Why have the Mayor and Council so far refused to rename it Tilton Park or Tilton Square? Over the years there has been much publicity and there has been much written, proposing and endorsing the change of name. The Hon. H. H. Ward, Jr. and W. Emerson Wilson have been

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Lewis B. Flinn, M.D., who writes here of the first president of the Medical Society of Delaware, was himself president in 1955.

very active in this endeavor. It has been endorsed by the News-Journal papers, by the Medical Society of Delaware on several occasions, including the 150th Anniversary of the Society in 1939[3] and again in 1964; by commentators Bill Frank and Tom Malone, by the Historical Society, by the Sons of the American Revolution and many others.

Who was Tilton? (Fig. 1) He was a fiery, brilliant, able, respected, attractive bachelor who served his State and Country well. Born in Kent County, Delaware, in 1745, he obtained his medical degree from the College of Philadelphia, now the University of Pennsylvania, in 1771.

In the Revolutionary War he became a regimental surgeon and saw service in many battles, including the Battle of Princeton, after which from 1770 to 1780 he became officer in charge of military hospitals in various locations. This assignment was largely the result of his forceful statements demanding improvement in the currently deplorable hospital facilities and the establishment of isolation and other sanitary measures. He was Surgeon General of the Army from 1813 to 1815. He was very active in politics, in fact a dynamic figure advocating many of the precepts of Thomas Jefferson. He was a member of the Continental Congress. One of his most delightful diatribes, using his pen name, Timoleon, was written in 1788. In 1958 it was edited and reprinted by John A. Munroe, Professor of History at the University of Delaware, entitled "Timoleon's Biographical History of Dionysius, Tyrant of Delaware."[4]

Tilton talked and wrote in a knowledgeable manner on many subjects. For instance, he made a noteworthy report to the Philadelphia Society for Promoting Agriculture in 1788.[5]

Tilton was elected the first president of the Medical Society of Delaware in 1789 and reelected every year until his death in 1822. The problems of the physician in Delaware, Dr. Tilton said were complicated by the fact that here "a greater variety of Soil and Climate (were) comprehended within a smaller extent of Territory than . . . anywhere else," for in Delaware were "all the varieties of Soil and Climate to be found in the middle States of America."

During the Civil War a temporary military hospital was built in Wilmington on land bounded by what is now 9th Street to Delaware Avenue and West Street to Tatnall Street. It was called Tilton Hospital.[6] In 1864 there were 241 patients in Tilton Hospital.

During World War II the large medical plant at Fort Dix, New Jersey, was designated the "Tilton General Hospital." There were 5000 patients at its peak of utilization.[3] It is interesting to note that the Chaplain in Chief was Col. Park W. Huntington, then pastor of St. Stephen's Lutheran Church, Wilmington, who is still very active in community affairs. His son, Park W. Huntington, Jr., M.D., is a pathologist at the Wilmington Medical Center.

Eighth Street Park is still a pleasant square in Wilmington. To re-name it Tilton Park would serve to preserve and enhance its dignity and purpose and it would also serve to perpetuate the memory of a colorful, able Delaware physician who served with distinction his City, State and Country.

LEWIS B. FLINN, M.D.

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> "But like a man walking alone in the darkness, I resolved to proceed so slowly and carefully that, even if I did not get very far, I was certain not to fall."
>
> *Descartes*

In Brief

British Fellowships

Six traveling fellowships to enable young American physicians to study in Great Britain for three months are being offered this year by the Royal Society of Medicine Foundation, Inc. Two $2500 grants give American physicians an opportunity to work and study in their areas of special interest with medical colleagues in university hospitals and research centers in Great Britain.

Applicants should be American citizens under the age of 45 who have completed their clinical training and have had at least two years of research experience or special training.

Applicantions should include a curiculum vitae and bibliography as well as two supporting letters and should be received by the Royal Society of Medicine Foundation, Inc., 20 Broad Street, New York, N. Y., 10005 no later than April 1, 1970. Notification of awards will be made by June 1, 1970.

In the News

Alfred R. Shands, Jr., M.D., surgeon-in-chief of the Alfred I. duPont Institute, has been elected to membership in the Society of Scholars at Johns Hopkins University.

C. Anthony D'Alonzo, M.D. assumed the Presidency of the American Academy of Occupational Medicine, February 13, 1970, for one year.

Speakers on "Ask the Doctor"

Speakers for April, 1970 on the Tuesday radio program, (11:05 a.m. WDEL) produced by the Medical Society of Delaware are: April 7, I. Lewis Chipman, Jr., M.D., *Colitis;* April 14, Isadore Slovin, M.D., *Desired and Undesired Pregnancies*; April 21, Charles R. Rickards, M.D., *Squints*; April 28, Martin Gibbs, M.D., *Disc Problems and Back Problems.*

Free INH for Treatment of Tuberculosis

The State Board of Health has agreed to supply physicians with Isoniazid (INH) for prophylactic or active treatment of any patient infected with tuberculosis. The physician's prescription blank which shows his name and mailing address along with the patient's name and the dosage prescribed should be sent to: Emily P. Bissell Hospital, 3000 Newport Gap Pike, Wilmington, Delaware 19808, Attention: Dr. Nathaniel Young. The drug will be mailed to the prescribing physician as soon as possible.

A New Service at the Senior Center

On Monday, March 16, 1970 the Wilmington Senior Center, 1901 Market Street, began opening its doors at 7:30 a.m. each morning Monday through Friday. This service is designed primarily for those people who can get an early ride into center city with working friends or children and would like to spend the day at the Center. Lunch and other accommodations can be arranged.

Hans Berger Award

The Women's Auxiliary of the American Electroencephalographic Society offers on annual award, known as the Hans Berger Award, of $300.00 for a meritorious manuscript dealing with electroencephalography, either clinical or experimental. Eligibility for the award is limited to individuals at pre-doctoral (Ph.D. or M.D.) and early post-doctoral levels. Candidates shall not be more than five years post-doctoral or two years post-residency. Manuscripts should be submitted by June 1, 1970 to: Dr. Reginald G. Bickford, Program Chairman, Neurosciences Department, School of Medicine, University of California at San Diego, La Jolla, California 92037.

AMA Establishes New Department

The American Medical Association established a new headquarters staff department January 22 to strengthen liaison and services to related medical organizations. It is the Department of Specialty Society Services, reporting directly to Richard S. Wilbur, M.D., assistant executive vice president. Department Director is Theodore R. Chilcoat, Jr., a former AMA Field Representative to Delaware.

The Department will serve and implement the directives of the Interspecialty Committee which was created in 1966.

CLINICAL NOTICES AND MEETINGS

Cardiac Symposium

The Thirteenth Annual Joint Cardiac Symposium sponsored by the Washington Heart Association and the Heart Association of Northern Virginia, Inc., will be held at the Marriott Twin Bridges Motor Hotel, on US #1, Washington, D.C. (Virginia Side) in the Persian Room on Wednesday, April 8.

Cardiology Postgraduate Courses

Scheduled are: April 1-3, Birmingham, three days of Cardiology on *Myocardial Infarction*; May 11-15, Atlanta, five days of Cardiology on *Cardiology Today*; July 15-17, Montreal, special three days of Cardiology on *ECG and Cardiovascular Drugs*. Registration forms and additional information may be had from the Delaware Heart Association, Suite 60, Independence Mall, Wilmington 19803.

ACP Course

The American College of Physicians announces a course in *Current Concepts in Physiology of the Gastrointestinal, Endocrine, and Respiratory Systems* to be held April 9-11, 1970 at the Holiday Inn, City Line Avenue and Monument Road, Philadelphia.

For further information write: Edward C. Rosenow, Jr., M.D., Executive Director, American College of Physicians, 4200 Pine Street Philadelphia, Pa., 19104.

Industrial Disease Screening Workshop

Disease screening in industry will be explored at a one-day workshop to be held at the Palmer House in Chicago on Saturday, April 11, 1970, sponsored by the Disease Detection Information Bureau. Subject matter will include both diabetes and multiphasic screening programs in industry. The workshop has been scheduled to precede the annual meeting of the Industrial Medical Association, to be held in Chicago April 13-17.

Postgraduate Course

The Department of Otolaryngology of the Eye and Ear Infirmary of the University of Illinois Hospital and the College of Medicine of the University of Illinois at the Medical Center, will conduct a postgraduate course in Laryngology and Bronchoesophagology from April 6-17. It will be held largely at the Eye and Ear Infirmary, and will include visits to a number of other Chicago hospitals. Interested registrants should write directly to the Department of Otolaryngology, College of Medicine, University of Illinois at the Medical Center, Postoffice Box 6998, Chicago, Illinois 60680.

AAP Spring Session

The institutionalized child, protection from infection, the pediatrician and hearing problems, infectious mononucleosis and EB virus, and logistics of delivery of child health practice are among the subjects scheduled to be presented during the annual spring session of the American Academy of Pediatrics, April 13-15 in the Washington Hilton Hotel, Washington, D.C. Special activities: a conference on pediatric nursing, April 12; an open meeting of the Academy "Head Start" Medical Consultation Service on Monday, April 13; and a luncheon meeting of the AAP Council on Pediatric Practice, Monday, April 13.

World Congress of Gynecology and Obstetrics

The American College of Obstetricians and Gynecologists will host the Sixth World Congress of Gynecology and Obstetrics to be held in New York City, April 12-18. The Congress program is organized around four principal subjects: Maternal physiology and its disturbances in pregnancy; Antenatal and perinatal influences on the development of the fetus and child; Social and endocrinological aspects and problems of female children and adolescents; and Pre-cancerous lesions in gynecology. Registration and other information regarding the Congress is available from: Mr. Donald F. Richardson, Congress Coordinator, Sixth World Congress of Gynecology and Obstetrics, 79 West Monroe Street, Chicago, Illinois 60603.

Symposium on Mental Disabilities

Elwyn Institute's 1970 Symposium on the Mentally Disabled will be held April 13-17 at the Elwyn Institute, 15 miles from the center of Philadelphia. The Institute can be reached by train to Media (Penn Central Railroad) or by automobile (Intersection U.S. Route 1 and Pa. 352). The course is primarily for professional personnel with teaching or administrative responsibilities in the fields of medicine, psychology, social work, nursing, special education, and vocational rehabilitation.

Neuropsychiatric Institute

The 13th Annual Neuropsychiatric Institute will be held on April 17 at the Coatesville, Pa., Veterans Administration Hospital. Specific topics, involving the aged, the black community, patients in hospitals, Indians and people on welfare and the modern youth movement on the college campus will be covered.

Abstracts of Heart Papers

The deadline for abstracts of papers and applications for scientific exhibits and cardiovascular films to be considered for presentation at the American Heart Association's 1970 Scientific Sessions is June 5, 1970. The four-day meeting is November 12-15 in Atlantic City.

Papers intended for presentation must be based on original investigations in the cardiovascular or related fields. The project's results and the investigator's conclusions should be summarized in the abstract and submitted on official AHA forms. For further information write the Department of Medical Education, 44 East 23rd Street, New York, N. Y. 10010.

Seminar on Cardiovascular Therapy

Jefferson Medical College announces a three-day seminar on Cardiovascular Therapy, April 27-29, 1970. An outstanding guest faculty from leading medical schools will discuss latest research and clinical findings.

Adequate time for questions and open discussion is planned. For further information contact John H. Killough, M.D., Ph.D., Associate Dean, Jefferson Medical College.

Continuing Education in Anesthesiology

Techniques and Problems of Basic Science Review, Indications and Complications will be held at Wayne State University, School of Medicine, April 27-May 8, 1970. For information write: Gianfranco Dal Santo, M.D., Department of Anesthesia, Wayne State University School of Medicine, 1400 Chrysler Freeway, Detroit, Michigan, 48207.

Cancer Seminar

On May 4-5, 1970, the American Cancer Society will sponsor the Twelfth Annual Western Cancer Seminar in Las Vegas, Nevada, at the Frontier Hotel. Topics will include: *Leukemias and Lymphomas; Head and Neck Chemotherapy; Use of Chemotherapeutic Agents; Mammography and Thermography and Terminal Patient Management.* Physician registration fee is twenty-five dollars for the two-day session. For further information write: American Cancer Society, 301 South Highland Drive, Las Vegas, Nevada, 89106.

Positions Wanted

Pathologist desires to locate practice in Delaware. Will be available in spring.
Physician, board-eligible in orthopedic surgery and plastic hand surgery desires information about any openings in Delaware.
If interested contact the Medical Society of Delaware, 658-7596.

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

MYDRIACYL — Anaphylactic Shock

A 5-year-old boy with a history of bronchial asthma was given an ophthalmologic examination in which atropine 1% and cyclopentolate (Cyclogyl) hydrochloride 1% drops were used without difficulty. Five years later the patient was again examined by an ophthalmologist. Immediately following instillation of 0.5% Mydriacyl (tropicamide) in each eye the patient lost consciousness. There was generalized muscular rigidity, opisthotonos, pallor and cyanosis. Consciousness was soon regained and within one hour the vital signs were normal. Full recovery was evident by the following morning. The reaction would appear to represent an acute hypersensitivity reaction to Mydriacyl ophthalmic solution. Mydriacyl is a synthetic derivative of tropic acid and pharmacologically related to the parasympatholytic group of drugs such as atropine, homatropine, and cyclopentolate. It may be assumed that in this case the prior use of atropine (or cyclopentolate) produced a state of sensitization that culminated in an anaphylactic reaction on exposure to the related compound tropicamide. The brochure supplied by the manufacturer of Mydriacyl (Alcon Laboratories Inc.) lists transient stinging as a possible side effect, and states that the product has been devoid of objective irritation, itching, allergic and/or sensitivity reactions.

Wahl JW:Arch Ophth 82:320, 1969.

DILANTIN SUSPENSIONS
Caution re Inadvertent Overdose

Until 1967, the only Dilantin (diphenylhydantoin; phenytoin) Suspension generally available in Australia was that containing 100 mg/4 ml. In October, 1966 a pediatric suspension containing 30 mg/4 ml was made available. A year later both preparations were changed to 100 mg/5 ml and 30 mg/5 ml. It is apparent that some physicians and pharmacists are unaware that two strengths of the suspension are available. The authors have observed five cases of severe Dilantin intoxication in children due to the prescribing, dispensing, and administration of the 100 mg/5 ml suspension in mistake for the 30 mg/5 ml pediatric suspension. Increasing drowsiness and ataxia were the chief clinical features leading to the diagnosis of drug intoxication. All of the children recovered. It was not possible to pinpoint the source of error in every case. In two cases it was probable that repeat prescriptions specified a volume dosage only, without giving the strength of the suspension or specifying the pediatric product. In one case the pharmacist dispensed the wrong strength by mistake; and in another case the correct instructions had been issued with the stronger suspension, but the parents, familiar with the pediatric suspension, took it upon themselves to administer a larger dose. In the fifth case the cause of the confusion was uncertain.

Hopkins IJ and Rooney JC:Med J Australia 2:278, 1969.

[Two Dilantin Suspensions are available in the U.S.: Dilantin-125 Suspension (diphenylhydantoin oral suspension) contains 125 mg diphenylhydantoin in each 5 ml and Dilantin 30 Suspension (diphenylhydantoin oral suspension) contains 30 mg diphenylhydantoin in each 5 ml].

SANSERT — Legal Action

A $67,500 settlement was made for the wrongful death of a 62-year-old man resulting from retroperitoneal fibrosis, a side effect of Sansert (methysergide maleate, Sandoz). The patient had been taking the drug, prescribed by a physician, for about three years. The basis of liability was negligence on the part of the manufacturer in failing to adequately warn doctors of the danger of this adverse effect.

Sloop V. Sandoz, Inc., F. Supp. (W. D. Tex.), No. 69-98-SA, 1969; ATLA News Letter 12 (3):112, 1969.

THE FORUM

Environment And Health

AIR QUALITY ACT OF 1967

Samuel V. Abramo, Ph.D.

Delaware adopted ambient air quality standards for sulfur oxides and particulates in November 1969. These standards and a great portion of the present effort to abate air pollution in Delaware result from the complex Air Quality Act passed by Congress in 1967. The Air Quality Act of 1967 provides for involvement of the public and State and Federal governments in the fight against air pollution. Public hearings are an integral part of the scheme to abate air pollution.

This Act required the Public Health Service to make a detailed study of the various air pollutants and to establish "criteria," ie, the concentrations of the pollutants and length of exposure to produce various adverse effects to health and property. The criteria for the two pollutants, sulfur oxides and particulates, were released in February 1969. At the same time the Public Health Department measured the existing air quality throughout the United States and established air quality regions, ie, areas of severe air pollution. New Castle County is a part of the eleven-county Philadelphia Air Quality Control Region, which also includes the five counties in Pennsylvania and the five counties in New Jersey surrounding Philadelphia.

Presently Delaware's Water and Air Resources Commission is developing, pursuant to the Air Quality Act of 1967, implementation plans to enforce the new air quality standards. The Commission may hold public hearings on these implementation plans some time in 1970.

Concurrently, the Department of HEW is developing "criteria" on other pollutants. Criteria for carbon monoxide and oxidants are to be published shortly. Delaware will have to repeat the process of establishing air quality standards and implementation plans for these pollutants and others in the future.

It is obvious that a great amount of time will pass before the Air Quality Act of 1967 will produce any abatement of air pollution. For example, the opinion has been expressed by an official in a neighboring state that they will require ten years to meet their air quality standards. Those people concerned with air quality in the State of Delaware should be encouraged to attend the public hearings on the implementation plans and support immediate action towards the abatement of air pollution.

Mr. Abramo, who is a Wilmington attorney and holds a Ph.D. in Chemistry, is Past President of Delaware Citizens for Clean Air, a group whose activities are sponsored by the Delaware Tuberculosis and Health Society.

This page is sponsored by the Delaware Tuberculosis and Health Society.

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Delaware
Medical Journal

APRIL, 1970
VOLUME 42
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REFUELING THE LAMP: SOME SUGGESTIONS FOR THE EDUCATION OF NURSES

• **Our fragmented nursing programs do not produce an adequate number of R.N.'s each year. The author suggests a method of reorganization of the training of increased numbers of students without a drop in standards.**

Theodore J. Eckberg, M.D.

The need for nurses in this country is now severe and will get worse. The federal government estimates that we will have to be graduating 81,000 registered nurses per year by 1974 to accommodate the anticipated need.[1] In 1967 this country graduated 38,237 registered nurses or less than half of those we will need per year in just five years.[2] We, of course, acquired about 5,000 nurses by immigration from foreign countries, including 1200 from Canada.[3]

These calculations were made with the anticipation that increasing numbers of practical or vocational nurses will be available, but the increase in their ranks cannot hope to replace the need for more registered nurses. These facts, coupled with the fact that nursing school admissions dropped by 3% for the years 1965-1967,[2] point out that our current system of nursing education is bogged down and probably cannot meet the need of our country.

Currently in this country we have practical nursing schools, hospital schools, community colleges, collegiate schools and colleges of nursing. There is little coordination or cooperation between these various institutions. Anyone who chooses nursing as a career must choose her level of aspiration before applying to school. If a practical nurse wishes to become a registered nurse, she will certainly have to repeat some work and may have to start her training over. Thus there are licensed practical nurses who find it impossible to upgrade themselves to registered nurse status because of financial and/or time obligations.

A Very Short Editorial on Eckberg

Editorialists tend to prolixity; our editorial comment on Dr. Eckberg's article can be nicely summarized in one word: Amen.

.B.Z.P.

A very common complaint that we hear is that girls in the collegiate schools of nursing enter the clinical phase of their training relatively late in their college careers and consequently have little experience during their

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Dr. Eckberg is an Otolaryngologist practicing in the Southern California Permanente Medical Group and a clinical instructor in surgery at the University of Southern California Medical School.

training of what it means to be a nurse and actually care for sick people.

We'd like therefore to have you consider this plan for a nursing training program. The first 12 to 18 months of schooling would be culminated by an examination which would license as a practical or vocational nurse. A second period of 18 months, following immediately or at a later period, would qualify the student to take the exams for registered nurse status. An additional year of training could then be provided to qualify the student for a degree in one of the special areas of nursing such as nursing education, ward management or public health nursing. Of course, postgraduate courses would continue to be offered.

Let's look at some of the advantages of this system. A student who is not able to academically move on to the higher program would still have sufficient training to allow her to work in the health care field and not waste her training. The young lady who is forced to stop training because of financial difficulties could work as a licensed practical nurse at a much more realistic wage than that being currently offered for part time work by student nurses. When you realize that the drop out/flunk out rate for nursing programs is in excess of 30% of each starting class and has been at this level for over 25 years,[4] it is apparent that this is a large reservoir of potentially salvagable nursing workers for our hospitals, clinics, and nursing homes. (A goodly number of these students list marriage as their reason for leaving school.[4])

We feel that another advantage of our proposed system is that the nursing student would be exposed to the less exotic phases of bedside nursing very early in her training, which would perhaps allow her to find a more suitable field of endeavor if she just doesn't like nursing. In addition, the registered nurse who is charge nurse or team leader on most floors, would by this system have a better concept of what other nursing members of her team are capable of doing and increase efficiency without decreasing patient care.

This type of program could also be used to salvage and utilize some of the huge numbers of personnel trained by the Armed Forces, for it seems unlikely that a fully professional military force will cease to produce this flow of unskilled personnel. The Navy has a five-month Hospital Corps School, which, when combined with a year of ward experience, could be credited for a portion of nursing training — probably the first 18 months of the full program. These men have skills which are virtually forgotten upon their return to civilian life. Today even a tank driver with his experience driving a tracked vehicle has a greater chance to use a service-learned skill than the Corpsman. This type of arrangement could provide the rapid injection of a large number of these men into the health care field and, important to them, into reasonably paying civilian jobs.

Our recommended changes are somewhat drastic and judging by my conversations with some of the nursing educators, more than a little controversial. However, a system producing less than half of its needed product probably needs a drastic change.

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STREPTOCOCCAL PHARYNGITIS

Part III – Streptococcal Recurrence Rates Following Therapy with Penicillin or with Clindamycin (7-Chlorolincomycin)

- Part I — Correlation of Cultures with Clinical Criteria — (February)
Part II — A Comparison of Techniques for Detecting Group A Streptococcus — (March)

MARTIN F. RANDOLPH, M.D.
JOHN J. REDYS, B.S.
EVELYN W. HIBBARD, B.S.

Streptococcal recurrence is a problem that plagues all pediatricians.[1] It is well known that one can expect 15 to 20% bacterial or clinical recurrence when penicillin is given orally in optimal dosage for ten days and a recurrence of 10% when Bicillin (Wyeth) is given parenterally.[2,3] Current recommendations of the American Heart Association have been in effect for some years.[4] Accordingly, a decrease in the current high streptococcal recurrence rate is not likely to occur with the continued use of penicillin. Treatment failures have been ascribed to a variety of factors, notably failure of children to take penicillin in prescribed amounts, reinfection from household contacts harboring the same strain of streptococci, and inactivation of penicillin by penicillinase-producing staphlococci present in nose and throat.[5] These factors taken singly or collectively do not resolve the discrepancy that exists between treatment failure after adequate penicillin therapy and the uniform sensitivity of the streptococcus to penicillin.

An effort to link recurrence with the presence of streptococcal "L" forms in certain patients was attempted. The laboratory protocol employed was suggested by the work of Gooder, who demonstrated reversion of "L" form group D streptococci to bacterial forms through serial cultivation in media containing a high concentration of gelatin at 25° centigrade.[6]

Another approach to reducing the recurrence rate was to use another antibiotic, clindamycin (7 chlorolincomycin), to which "L" forms should be sensitive. Comparison was made of recurrences, clinical or bacterial, within 60 days of the onset of therapy in children with throat cultures positive for group A beta hemolytic streptococci when given clindamycin (7 chlorolincomycin) or penicillin for 10 days in a random double-blind manner.

Methods

An outline of the procedure used to detect a recurrence is presented in Table I. The cultures for "L" forms required special hypertonic media. Our laboratory procedure was modified as the work progressed with the most recent methodology as shown in Table II.

For this study throat swabs were taken at ten days and again at thirty days. One swab was mailed in a silica gel kit for conventional culturing while the second was treated in the manner shown in Table II.

Children were seen and examined at three days, at thirty days, and at sixty days. Blood was drawn at three days and again at sixty days for antistreptolysin O titer (ASO) and anti-M antibody determinations. Routine urinalyses were also performed on these visits to exclude glomerular nephritis. Serological studies are presently being undertaken and

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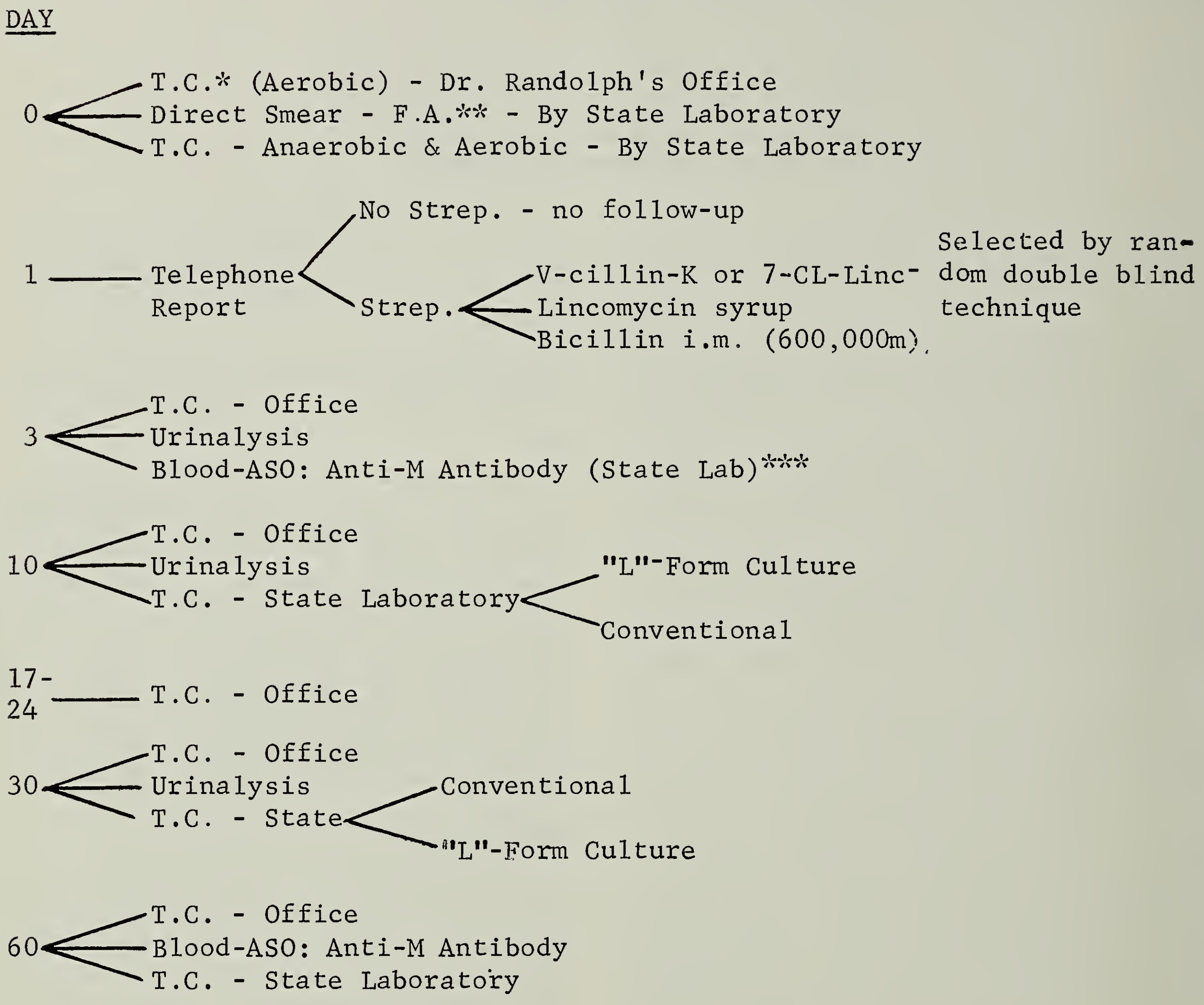
Martin F. Randolph, M.D., F.A.A.P., F.A.A.A.S., is a practicing pediatrician in Danbury, Connecticut and is associated with the Departments of Pediatrics and Epidemiology, Yale University School of Medicine; John Redys is Supervising Microbiologist, Connecticut State Department of Health; Evelyn D. Hibbard is Assistant Director, Division of Laboratories, Connecticut State Department of Health.

Janet Clark, Ph.D., Coordinator of Research, Wilmington Medical Center, provided valuable editorial assistance in the adaptation of Doctor Randolph's paper for the Journal.

TABLE I

PROCEDURE FOR DETECTING RECURRENCE OF GROUP A STREPTOCOCCUS



DAY

0
T.C.* (Aerobic) - Dr. Randolph's Office
Direct Smear - F.A.** - By State Laboratory
T.C. - Anaerobic & Aerobic - By State Laboratory

1
Telephone Report
No Strep. - no follow-up
Strep.
V-cillin-K or 7-CL-Linc-
Lincomycin syrup
Bicillin i.m. (600,000m)
Selected by random double blind technique

3
T.C. - Office
Urinalysis
Blood-ASO: Anti-M Antibody (State Lab)***

10
T.C. - Office
Urinalysis
T.C. - State Laboratory
"L"-Form Culture
Conventional

17-24
T.C. - Office

30
T.C. - Office
Urinalysis
T.C. - State
Conventional
"L"-Form Culture

60
T.C. - Office
Blood-ASO: Anti-M Antibody
T.C. - State Laboratory

*T.C. - Throat Culture
**F.A. - Fluorescent Antibody Test for Group A. Streptococcus
***ASO - Antistreptolysin O Test

will be reported at a later date. The family was notified within twenty-four hours of the cultural results; children with positive cultures (1+ to 4+) were assigned to penicillin or to 7-chlorolincomycin by coded capsules in a random double-blind manner. Dosage was calculated on a weight basis, and one or two capsules were given three or four times per day. Children who could not take capsules were given liquid lincomycin by open label. Vomiting children were given one injection of 600,000 units of Bicillin.

Results

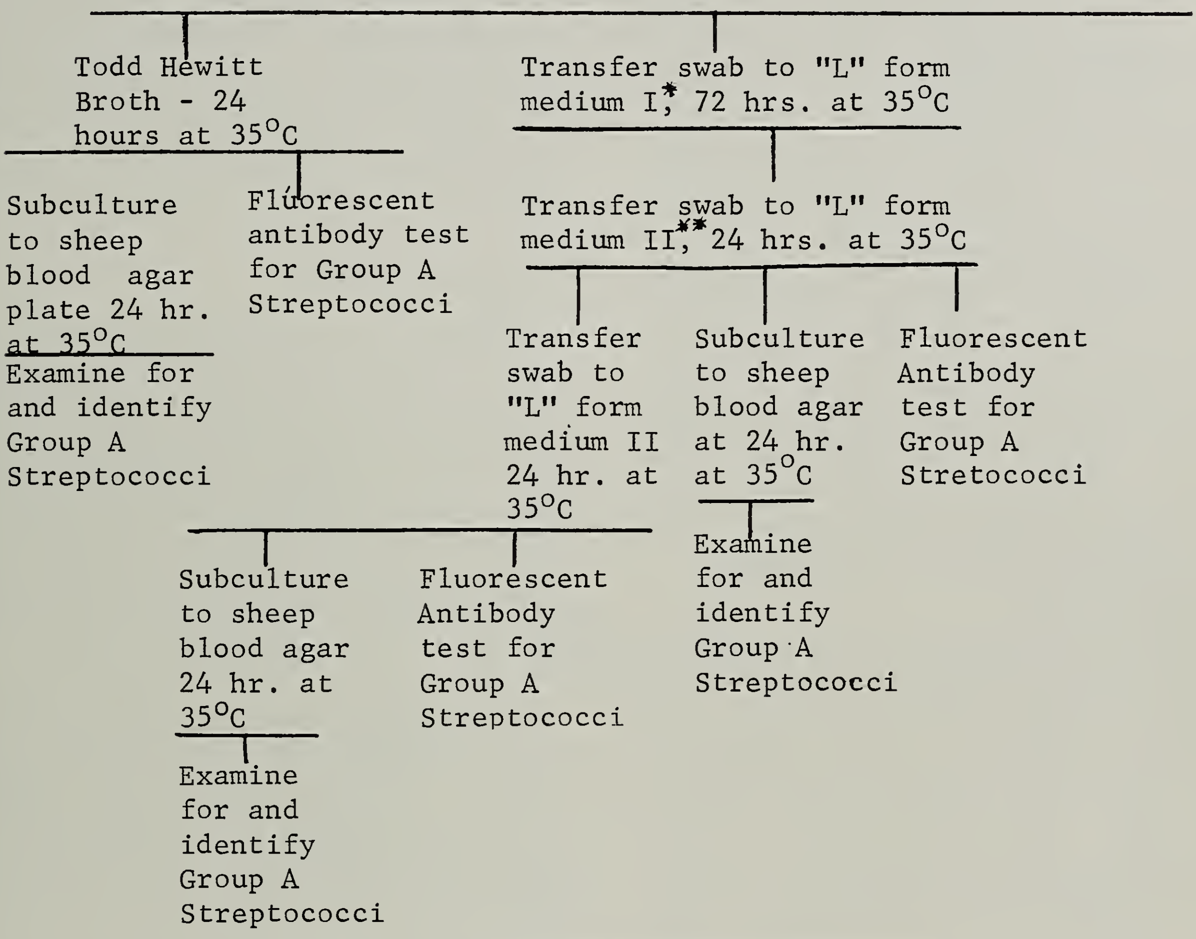
Clinical Response and Streptococcal Recurrences

There were approximately 400 patients for whom throat cultures were submitted to the State Laboratories; approximately 200 of these were positive for group A beta hemolytic streptococci. Data are completed for 60

TABLE II

EXPERIMENTAL PROCEDURE FOR CULTIVATING STREPTOCOCCAL "L" FORMS

1. Conventional Streptococcal Culture
2. Swab transported to State Laboratory in "L" form medium I;* incubated 24 hours at 35°C


Todd Hewitt Broth - 24 hours at 35°C
Subculture to sheep blood agar plate 24 hr. at 35°C
Examine for and identify Group A Streptococci
Fluorescent antibody test for Group A Streptococci
Transfer swab to "L" form medium I;* 72 hrs. at 35°C
Transfer swab to "L" form medium II,** 24 hrs. at 35°C
Transfer swab to "L" form medium II 24 hr. at 35°C
Subculture to sheep blood agar 24 hr. at 35°C
Examine for and identify Group A Streptococci
Fluorescent Antibody test for Group A Streptococci
Subculture to sheep blood agar at 24 hr. at 35°C
Examine for and identify Group A Streptococci
Fluorescent Antibody test for Group A Stretococci

day follow-up on 168 of these children. Of this number 131 participated in the double-blind comparison of penicillin and 7-chlorolincomycin; 27 children were vomiting and required Bicillin (600,000 units); and three children refused capsules and were given syrup of lincomycin.

Clinical Response

The immediate response to either antibiotic was essentially the same. Patients were dramatically improved in 12 to 24 hours; three day throat cultures, with few exceptions, were negative; symptoms terminated within 48 hours in most children; and the majority returned to school or to full activity on the third day of therapy. All children were treated for ten days.

Recurrence Data

In this comparison study of penicillin and 7-chlorolincomycin, two sets of data will be presented. The first is the number of patients in the pre-school and school-aged categories with a recurrence in 30 days or 60 days when penicillin or when 7-chlorolincomycin was given in a double-blind manner. Results are recorded in Table III.

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*"L" FORM MEDIUM I: Beef Heart Infusion 2.5%, NaCl 3.5%, Sterile Horse Serum 10.0% (in Dist. H_2O)

**"L" FORM MEDIUM II: Todd Hewitt broth solidified with 25% Bacto gelatin.

It will be noted that of 72 children in the penicillin group, 16 had a recurrence within 30 days for a recurrence rate of 20.8%, and one child within 60 days for a recurrence rate of 1.4%. One-half of the recurrences within 30 days were in pre-school children. M-typing was attempted in 12 children; four were not typable. Type 2 was represented three times; type 4, three times; type 5 and 18, once each. By contrast, in the 7-chlorolincomycin group, only four of 59 children had a recurrence within 30 days for a rate of 6.8%. In each instance the streptococcus was non-typable. There were two failures within 60 days; these organisms also were non-typable. Streptococcal recurrences were clinically manifested in one-half (8) of the children taking penicillin and in one-half of the children taking lincomycin (2). Parents were notified of the carrier state but were advised that no treatment was necessary unless the child became symptomatic. Children with clinical recurrences were given a second course of therapy with prompt clinical response in each instance.

Multiple Isolations

The second set of recurrence data relates to multiple isolations of group A streptococcus for the same child (Table IV). Of the total number of patients, 47 (11.5%) yielded more than one isolation during the 4½ months of observation. This represents 23% of the positive cases. Attention is directed to the fact that one patient was found positive for group A on five different occasions; four were positive on four occasions, eleven patients on three occasions; and 31 had two positive cultures. Twenty of the children showing repeatedly positive cultures were members of the group of 131 children participating in the comparison study of penicillin and 7-chlorolincomycin. When the code was broken, fifteen had taken penicillin and five, 7-chlorolincomycin. Three children were taking syrup of lincomycin; the remaining children (24) were unable to take oral medication and were given Bicillin. Thus of the 47 patients, 39 had been taking penicillin and experienced a total of 100 recurrences; the remaining eight patients were on lincomycin or 7-chlorolincomycin and had a total of 16 recurrences. All 47 relapsed patients had relapsed within three months, two-thirds within two months, one-half within five weeks. Seventy per cent of the relapses were clinical. The remainder were only bacterial recurrences. Typing was attempted in 31 of the 47 patients. Sixteen or approximately one-half of these patients relapsed with the same type, ten within five weeks, and the remaining six patients within eight weeks of the initial infection. One-half the patients (8) had clinical relapses, and one-half were bacterial recurrences. Bacterial recurrences were not treated; clinical recurrences responded promptly to a repeat ten-day course of therapy.

"L" Form Culture Efforts

Attempts to demonstrate the presence of group A streptococcal "L" forms in treated patients were non-conclusive. In this experiment, we endeavoured to encourage reversion from the "L" form to the bacterial form, which then could be recognized readily either by culture or by the FA method. It was felt that parallel negative conventional cultures would lend support to the existence of the pathogen as an "L" form within the patient.

Of 259 cultures taken in parallel, only two of the specimens processed according to the procedure illustrated in the flow diagram, Table II, yielded hemolytic streptococci when conventional cultures were negative. It was interesting to observe that neither culture was positive until after the second serial passage, suggesting possible existence in the "L" phase. Grouping revealed both were Lancefield serologic group G.

Discussion

In 1958, McDermott postulated his theory of microbial persistence through the "L" form variant.[7] This theory proposed that since the "L" form is resistant to penicillin, the "L" form is allowed to persist and, on occasion, to revert to the parent strain, and possibly initiate a second round of disease when penicillin is withdrawn and conditions are favorable. The present investigation and a similar study reported two years ago[8] were predicated on *in vitro* and *in vivo* evidence of sensitivity of the group A streptococcal "L" form to lincomycin

TABLE III

RECURRENCES OF GROUP A STREPTOCOCCUS FOLLOWING THERAPY

With Potassium Phenoxymethyl Penicillin

		30 DAY		60 DAY	
AGE GROUP	NUMBER PATIENTS	BACT.	CLIN.	BACT.	CLIN.
Pre-School (3-6 yrs.)	23	4	4	0	0
School (6-15 yrs.)	49	4	4	0	1
Total	72	8	8	0	1
% Recurring		20.8%		1.4%	
M Typing: Types : 2 (3 pts.); 4 (3 pts.); 5 (1 pt.); 18 (1 pt.) Not typable (4 pts.)					

With 7-Chlorolincomycin

		30 DAY		60 DAY	
AGE GROUP	NUMBER PATIENTS	BACT.	CLIN.	BACT.	CLIN.
Pre-School (3-6 yrs.)	14	1	1	0	0
School (6-15 yrs.)	45	1	1	1	1
Total	59	2	2	1	1
% Recurring		6.8%		2.4%	
M Typing: Not Typable					

and its resistance to penicillin; the destruction of the protoplast would be expressed in a recurrence rate consistently lower than that of penicillin. Hopefully, too, Koch's postulates would be fulfilled by cultivation of the "L" form. The latter was a vain hope. In spite of elaborate efforts by personnel of the Connecticut State Laboratories, "L" forms were cultivated in just two of 259 attempts.

Nevertheless, in both studies treatment failure was significantly greater in the penicillin than in the lincomycin group. Microbial persistence was adequately demonstrated in this study by multiple isolations of streptococci in 47 patients or 23% of the treated population. These isolations began three weeks after the completion of therapy, peaked at five weeks and ended at nine weeks. The majority of

TABLE IV

REPEATED ISOLATIONS OF GROUP A STREPTOCOCCUS DURING 4.5 MONTHS OF OBSERVATION

	PENICILLIN GROUP					LINCOMYCIN GROUP				
	Number Patients	Number Isolations				Number Patients	Number Isolations			
AGE		2	3	4	5		2	3	4	5
Pre-School	24	7	5	1	0	3	3	0	0	0
School	15	11	6	3	1	5	5	0	0	0
Total	39	36	33	16	5	8	16	0	0	0

Total Isolations: 90 Total Isolations: 16

children in both groups had two or more throat cultures negative for streptococci before relapse occurred, indicating that treatment failure was probably not dependent upon inadequate therapy in either group. Thirty-nine of these patients were treated with penicillin and only eight with lincomycin; there were 100 post-treatment isolations of group A streptococci in the penicillin group and only sixteeen in the lincomycin group. Multiple isolations, often of the same M-type, occurring in a relatively short period after the completion of therapy, would suggest that most of the patients represent streptococcal recurrence or the persister state rather than reinfection.[1]

Serologic studies now in progress may reveal that the immuno-suppression known to be associated with the use of penicillin will be critically greater than the immuno-suppression associated with the use of the bacteriostatic agent lincomycin. Possibly the latter allows a greater participation of the host immune mechanism. Ultimately, host response is necessary for the final eradication of the infecting organism.[7]

Some investigators regard streptococcal persistence, ie, the carrier state, as a state possibly useful to the host and of little risk to the community.[9,10] The carrier state is useful to the host, they contend, since type-specific immunity is usually acquired to the carrier organism. It is of little risk to the community, they believe, since the streptococcus gradually loses its M-protein substance in the carrier state and thereby its virulence is attenuated. While these thoughts have merit, it is also apparent from this experience that since clinical recurrence can be demonstrated with reasonable frequency, streptococcal persistence constitutes a threat to the host and, by extension, to the community. Eradication of the organism is to be preferred to clinical suppression of the infection.[7]

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TRANSOCEAN RACING:

From Bermuda to Sweden

• The author, an intrepid sailor, tells the story of his participation in a sailing adventure on board the seventy-two-foot ketch, Barlovento.

Theodore B. Strange, M.D.

My sailing career started early, when at the age of nine, I was shanghaied as crew for my older brother, the skipper of a twelve-foot cat boat. We sailed the Great South Bay off Long Island every summer until I was fourteen, at which time we moved away from the water to the mountains of Virginia. Years later, having finished my medical training, one of the factors in choosing the place to practice orthopedics was the proximity of good sailing ground. The Chesapeake Bay offers some of the best cruising in the world with 2700 miles of rivers to discover, natural phenomena to enjoy, islands to explore and a treasure-trove of marine activity to study. Very soon after settling in Wilmington I bought my Lightning, a nineteen-foot day sailor, and found a ready crew in my own house. We christened the boat *The Five Brothers,* and since that time my sons and I have sailed together for many years. *The Five Brothers* has been retired now and replaced by a small fleet, so we have a plethora of skippers, and each of us has learned the multi-responsibilities as well as the joys of being in command while using the power of the wind and the tides to reach a destination safely.

As one progresses from small to larger boats and from crew to skipper, one's horizons enlarge from pond to bay and ultimately to the ocean. Given any two or more sailboats of comparable size going more or less in the same direction, a race will result. Here again one progresses from the unscheduled race to scheduled racing, and the ultimate is the transocean race. In the summer of 1960 I was asked to crew on a seventy-two-foot ketch in a 3,433 mile race from Bermuda to Sweden. In preparation I sailed on the same boat the previous fall in the Chesapeake area and in the winter in the waters between Florida and Nassau, and then in the spring we raced in Long Island Sound. I did not have enough time to race with the rest of the crew in the Newport-Bermuda Race, so I flew there and joined the boat a few days before we were to leave for Scandinavia. We were twelve in all, including a cook and a navigator who did not stand watches. We were divided into two watches of five men each with five watch changes in twenty-four hours from 6 a.m. to noon, from noon to 6 p.m., 6 p.m. to 10 p.m., 10 p.m. to 2 a.m., and 2 a.m. to 6 a.m.. The advantage of this watch system is that our watch changed each day, and the long watches were during the daylight hours.

We left Bermuda at twelve o'clock on June 30, one of seventeen competing boats ranging from thirty to seventy-two feet. We were headed for a point in the Atlantic Ocean, Latitude 43 *N.*, Longitude 45 *W.* From thence we would head north of Ireland and Scotland to sail between the Orkney and Shetland Is-

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Dr. Strange is an Orthopedic Surgeon in private practice in Wilmington.

lands and then across the North Sea, to our finish at the northern tip of Denmark. At that time it was the longest race ever sailed across the Atlantic and the largest.

The race began in a light rain, the harbor was quiet, the jazz of race week in Bermuda was over, and we were ready to meet a serious challenge. Our skipper had x-rayed our rigging and hardware for faults that could give way under stress. The crew checked all its various responsibilities for the final time on this beautiful boat we had come to know so well. The next three weeks would tell us exactly how well.

We were now in our own totally contained little world with provisions and water, replacement parts, extra sails, personal gear. The wives of two of the crew enlarged my medical supplies and thus gave insight into their major concerns. One sent a small container of oxygen, and the other sent cans of soup that heated themselves when activated with a key. One of the crew members supplied hundreds of vitamin tablets to augment a larder of frozen beef steaks, lamb chops, chickens, 100 dozen eggs, 57 varieties of vegetables, and enough fortified canned milk for 4200 meals.

The weather was warm as we started off in shorts and open shirts. As usual we were all very tired until after two or three days we settled down into a working routine. Interestingly enough, after the second day we never saw any of the other sixteen boats except on the sixth morning when we caught a glimpse of a sail on the horizon.

On watch every one did his hour at the wheel steering by the compass, and the rest of the time was spent trimming sails and making frequent sail changes in an effort to take advantage of every change of air. To win a race we all knew we had to work at it all the time. Thus every stitch of canvas that would make the boat go a little faster was used, resulting in a high rate of wear and tear on the sails as well as on the standing and running rigging. On the fourth night, at ten-thirty the spinnaker, which had been billowing beautifully out in the front of the boat for the entire time, split at the top reducing it to ribbons of nylon before it fell into the sea. The drag of the tattered sail stopped us dead in the water, so it was immediately cut away and a new one was set in its place.

A boat this size, in a twenty-five knot wind, will do nine knots, and we averaged 175 miles per day, our worst day being 84 miles when we were becalmed in the North Sea, and our best day 224 miles on the sixth day of the voyage. We had radio contact once a day with some of the other boats and learned that one of them had lost the top of her mast and had had to drop out of the race and go into Newfoundland for repairs.

We sailed in and out of squalls with gusts up to 40 knots. On the ninth day, at 47 *N.* Longitude, 35 *W.* Latitude, at three o'clock in the morning we were becalmed on the starboard tack. Suddenly we were hit by a raging squall. The temperature dropped rapidly, and in spite of the physical exertion of handling the threats of the unexpected storm in the pitch blackness we were terribly cold. The wind had changed direction 180 degrees and we spent some time untangling the mess and setting new sails. We were now truly in the North Atlantic; dirty grey skies appeared with the daybreak, freezing cold, each of us wearing layers and layers of clothes topped by our foul-weather gear.

We were in for a real storm with the wind increasing to just under 60 miles an hour. At 40 knots the rigging makes a singing noise; at 60 it screams. A huge sea soon built up on our port beam. The ocean appeared like advancing hillsides, coming at a rapid rate, waves breaking at the top, and the air filled with spray as it spewed across the boat. Green water flowed over the sides of the vessel as we heeled over to starboard. We all wore safety harness topside and immediately attached ourselves to something stable as we moved about the decks. Sails, as usual, had to be changed.

Going forward with a shipmate to take down the jib, I was washed free of the deck and kept aboard only by my life line and harness. The spinnaker pole, 40 feet long, weighing over a hundred pounds and lashed fore and aft to the deck, was found missing later. Deck plates which had been welded to the deck

GLIMPSES AT SEA

Clouds are gathering

Storm in the North Sea

The author at the helm

Coming into Marstrand Harbor

The Barlovento slips into port

were torn away, and the dinghy was knocked off its chocks. Incredibly, the boat heeled over 90 degrees, thus setting off the emergency flashing light system, which was controlled by a mercury switch. Besides the wear and tear on the vessel, there was equal stress on the crew. On the entire boat there was no dry place. Cooking was out of the question. Down below we walked on the sides of the boat more often than on the deck. To stay in our bunks we fastened canvas along the sides and crawled over it. It would seem like scarcely a few moments of restless respite before someone would shake us for the next watch. It took at least twenty minutes to get into our protective gear and go topside again. Communication was out of the question except by gestures from bow to cockpit, as all sound was carried away by the howling wind. The batteries came adrift knocking out the electrical system. Some of us, probably all, wondered why we had sought out this trip with such enthusiasm. Two days later off the northern end of Scotland, becalmed in the sunshine, clothes and bedding drying topside, we found it hard to believe that we had ever been in such a storm.

We were now as far north as the Arctic Circle, and it was fortunate that we had twenty hours of sunshine every day to help us get the sodden masses of clothes and bedding back into usable shape. It was strange to go off watch at 10 p.m. in the bright twilight of day and to get up at 2 a.m. for the next watch as the sun was rising.

As we passed between the Shetland and Orkney Islands, a fog descended and with it the nerve-wracking calm that is the dread of all sailors, particularly racers. But the fog was cleared by a fair breeze as we headed for the finish off the northern tip of Denmark. The Committee Boat at the finish acknowledged our arrival, but it was not until we pulled into the magnificent harbor of the island of Marstrand, Sweden, that thousands of boats which had gathered for race week, saluted us with fireworks and whistles, and we saw that we were the second boat to arrive in the transocean group. All classes of boats were there to greet us, from the King of Norway to family boats on hand for the holiday, from the Swedish princesses in their father's yacht to the midshipmen on their huge four-masted training ship, who lent us their abundance of hot water and showers.

We tied our boat stern end to the quay where large iron rings were cemented into the stone street. The water was very deep, and there is no tide, so docking is as simple as back-in parking. Once settled, we relaxed in the cockpit and watched one of the most beautiful sights in the world: long-legged Swedish girls in sweaters and shorts walking down the quay. They in turn were watching the sailors, who had sailed for nineteen days to visit them.

I was asked to sail in another transocean race from Bermuda to Denmark in 1966, but for some reason, I preferred to spend my vacation sailing a more leisurely cruise on my own 28-foot sloop to racing an ocean again.

A physician sailor is often in demand on the larger racing boats. I did sew up one deep laceration and also kept a watchful eye out for the morale of the men, who were confined through the tedious hours of nineteen days and nights in close quarters. It was a wonderful experience, so if you are interested, pass the word around the yacht club. Who knows where the next race may take you?

> "The more we examine bodies the more we must become convinced of the necessity of considering local disease not from the standpoint of the compound organs, which are rarely affected as a whole, but from the standpoint of their different textures, which are almost always attacked separately." *Bichat*

Highlights

• We invite members of our Society to send in abstracts of their presentations at recent meetings so that they may be published in the Journal and thus shared with their colleagues.

THE INTRAOCULAR PENETRATION OF LINCOMYCIN

Edward F. Becker, M.D. — *Abstracted from the American Journal of Ophthalmology, June, 1969.*

Intraocular penetration of several antibiotics (kanamycin, ristocetin, chloramphenicol and spiramycin) has been reported with large doses required to achieve therapeutic intraocular levels.

Most studies have suggested that few antibiotics give adequate intraocular levels following oral or parenteral administration. Since lincomycin (Lincocin®) penetrates the blood-brain barrier and produces adequate levels in the cerebrospinal fluid, it was decided to determine the intraocular penetration of this antibiotic.

Lincomycin is effective against gram-positive organisms, specifically Staphylococcus aureus, alpha and beta Streptococci and Pneumococci. It is ineffective against most gram-negative organisms.

Fourteen patients scheduled for routine eye surgery were selected from the ward and private services of the Wilmington Medical Center: eleven cataract extractions, two enucleations, and one scleral buckling for retinal detachment.

Lincomycin was given intramuscularly in eleven patients, orally in one and by intravenous infusion in two. A 600mg dosage was administered in the evening before surgery and every four hours until the time of surgery. The final dose was administered from one-half to three hours before aqueous and/or vitreous samples were taken. Most of the

RESULTS OF ASSAY OF LINCOMYCIN

Patient	Age (yr)	Sex	Administration	Hours after Last Dose	Serum μg/ml	Aqueous μg/ml	Percent
1	59	M	IM	2	10.2	1.2	12
2	57	M	IM	2	10.9	1.0	9
3	78	F	IM	1 1/2	17.8	1.4	8
4	43	M	IM	1/2	12.4	<0.5	—
5	87	M	IM	2	14.0	2.0	14
6	79	F	IM	2	23.0	1.5	7
7	77	F	IM	2	13.5	1.2	9
8	62	F	IM	1 1/2	13.9	1.1	8
9	89	M	IM	1 1/2	19.4	1.1	6
10	80	F	IM	3/4	27.1	<0.5	—
11	60	F	IM	3	28.1	21.0	75
12	55	F	PO	3	9.8	<0.5	—
13	72	M	IV	—	62.0	4.9	9
12	55	F	PO	3	9.8	0.5	—
11	60	F	IM	3	28.1	19.5	69
14	59	F	IV	—	29.0	2.4	8

eleven patients received 2.4 gm of the antibiotic, as did the one patient given the drug orally and the two receiving intravenous infusions.

Aqueous and vitreous samples were removed from the enucleated eyes by syringe; the subretinal fluid was taken at the time of penetrating diathermy. Aqueous samples collected during cataract extractions were taken in the following manner: A knife-needle incision entered the anterior chamber at the limbus; about 0.2 cc of aqueous was withdrawn into a disposable tuberculin syringe containing 5.0 cc of clotted blood drawn at the time of surgery.

The assays were performed by the laboratory of the Upjohn Company by the diffusion technique with Sarcina lutea as the test organism.

Results

Significant levels (Table 1) were obtained in all except the oral samples and those in which the last intramuscular dose had been administered less than one hour before the sample was taken. The latter finding indicates that it takes over three quarters of an hour for the drug to cross the blood-aqueous barrier.

When lincomycin was given intramuscularly to the ten patients with noninflamed eyes and the last injection was one and one-half to two hours before aqueous was taken, the levels ranged from 1.0 to 2.0 mcg/ml — average 1.3 mcg/ml. The aqueous level in the inflamed eye (glaucoma, staphyloma) was 21.0 mcg/ml after intramuscular lincomycin. The bloody vitreous sample taken from this same eye showed a lincomycin concentration of 19.5 mcg/ml.

Conclusions

Since a concentration of 1.0 mcg/ml is effective against most pneumococci and streptococci and a concentration of 2.0 mcg/ml is effective against 90% of staphylococci, the levels of lincomycin assayed appear to be therapeutic. Further, intraocular levels are greatly increased in the presence of inflammation. These data suggest that lincomycin would be a useful and effective antibiotic in the treatment of ocular infections.

NATIONAL X-RAY EXPOSURE STUDY

The Public Health Service will conduct a national study to obtain information on population exposure to diagnostic and therapeutic x-radiation. It will begin on April 13th and will be made jointly by the Bureau of Radiological Health and the National Center for Health Statistics. The study was planned with the advice of a group of radiologists and physicists representing the American College of Radiology. The study follows two earlier national x-ray surveys by PHS agencies. The 1970 study will use the same collection and analysis methods employed in the 1964 survey so that results of the investigations will be directly comparable.

The new study will be conducted in three phases:

— A household interview survey to obtain the x-ray visit experience of a representative sample of the U.S. population.

— A follow-up questionnaire to obtain examination data from x-ray facilities identified in the household survey. From May through December, approximately 5,000 facilities will be asked to supply these details.

— An x-ray equipment survey to provide physical measurements in a selected subsample of x-ray facilities.

Based on data obtained during the household and facility surveys, a descriptive analysis of the population's x-ray experience in 1970 will be prepared.

Since this study is based on a small representative sample, the cooperation of each practitioner contacted in the follow-up phase is essential to meet the study objectives. All information pertaining to individual patients, practitioners and facilities will be treated confidentially. Only statistical summaries will be made available for publication.

Additional information about plans for the survey may be obtained from the Bureau of Radiological Health, 1901 Chapman Avenue, Rockville, Maryland 20852.

Special Reports

• Special reports of recent meetings attended by Society members are summarized for their colleagues. We thank these doctors for their contributions and encourage other physicians to submit reports.

CONFERENCE ON RESPIRATORY THERAPY

Boston, Mass., November 1969

Cytology

The electron microscope has differentiated the cells of the alveoli into clara cells, type II cells, endothelial cells, mesodermal cells and bronchiolar cells, which are specifically involved in different lung diseases. The clara cell in the terminal bronchiole responds in viral pneumonias; the bronchiolar cell in the terminal bronchiole responds to regenerative metaplasia. The type II cell in the alveolus is involved in desquamative pneumonitis. The endothelial cells are involved where there is oxygen toxicity, radiation toxicity, pulmonary hemosiderosis or Goodpasture's syndrome. The mesodermal cell of the alveoli is involved in sarcoid and interstitial diseases.

Infections

In the normal lung, pulmonary defense mechanisms maintain sterility of the lung below the carina. In chronic bronchitis, sterility is not maintained below the carina. One month post tracheotomy the normal lung is again sterile. Smoking, alcohol, hypoxia and barbiturates are cited as agents inhibiting the clearing mechanisms of the lung and leading to infection.

In acute pulmonary infections sputum culture is truly representative of bronchial secretion in 81% of the specimens. In chronic bronchitis sputum cultures can be unreliable with 47% of the specimens of sputum being sterile even though there are pathogens in the bronchi. In 37% of cultures, pathogens are in sputum but not in the bronchi, and in 21% the sputum and the bronchial cultures are the same.

Tetracycline, ampicillin or penicillin are the usual drugs of choice in the treatment of the two most common pathogens involving the lung — *Hemophilus influenza* and the pneumococcus. If there is an associated resistant Staphylococcus aureus, it may inactivate ampicillin thus hindering its effect.

Oxygen Therapy

Adequate arterial oxygen levels can almost always be obtained by the use of twin-pronged nasal catheters running at 3 liters per minute. Arterial blood gases should be monitored on all critical cases at frequent intervals. If oxygen is needed, it should be administered continuously at the proper level as determined by maintenance of proper blood gas levels: oxygen should be given in the dose necessary to provide adequate tissue oxygenation but not to eliminate the anoxic drive in patients with respiratory acidosis. When oxygen is needed, it should never be withheld, but the dose of oxygen must be calibrated to the patient's need.

Smoke

Smoke inhalation causes anoxia and alkalosis; the chest x-ray may not become abnormal for three days. All supportive respiratory care is used and steroids suggested only as a last resort. In the series presented it was not suggested that steroids be used early in smoke inhalation because of burn patients' predisposition to peptic ulcer formation and infection.

Sponsored by the Department of Respiratory Therapy of the Children's Hospital Medical Center, New England Deaconess Hospital, and the Leahy Clinic Foundation, and co-sponsored by the American College of Chest Physicians, November 1969.

The Stiff Lung

Intermittent positive pressure breathing is often abused but does have value where needed to improve ventilation. It lowers carbon dioxide levels, overcomes breathing resistance, distributes aerosols, aids in breathing exercises, and helps rest the tired patient.

The stiff lung syndrome has become an "in" thing. Etiological factors are: trauma, viral infections, fat embolism, shock, and oxygen toxicity. It has been referred to as ventilator lung or oxygen toxicity lung. Therapy is supportive care, continued (not intermittent) positive pressure breathing, and steroids.

GI Bleeding with High Hypercapnia

The increased incidence of gastrointestinal bleeding with high carbon dioxide levels was again documented. In animal experiments an increased carbon dioxide level is found to be a sympathetic stimulant causing vasoconstriction. Alpha adrenergic blockade with Dibenzyline [Smith Kline and French] has been found to decrease bleeding in animals, but is not yet recommended for clinical use in humans.

Ventilation Therapy

Ventilators are now available for use on infants and children where rapid response time and low triggered time are required. The Arp ventilator is a very satisfactory infant type ventilator.

Throughout this course the complications of hyperventilation resulting from too vigorous ventilation of patients in respiratory failure were stressed: hypopotassemia, convulsions, coma and death. Proper control of ventilation requires monitoring of blood gases.

Positive pressure Bennett machines are calibrated to deliver 40% oxygen when on the dilution setting. However, when attached to patients they may deliver far more, perhaps 70%, and so one must watch for oxygen toxicity in patients who are on even the 40% oxygen setting on a Bennett machine. These Bennett machines were calibrated to 40% oxygen when not attached to patients. The act of attaching the machine to the patient interferes with the calibration setting and promotes a higher percentage of oxygen inhalation.

It must be emphasized that the main purpose of positive pressure breathing is to decrease the energy cost of breathing and rest the exhausted patient.

Intermittent positive pressure treatment increases anti-diuretic hormone and decreases urine output. If one decreases the amount of positive pressure, there may be a decrease in anti-diuretic hormone and the urine output will increase.

Intermittent positive pressure breathing should not be used merely to administer an aerosol.

In the use of cuffed tracheostomy tubes one should be watchful for complications such as tracheal compression, ulceration, and tracheal stenosis.

In severe respiratory acidosis use effective ventilation first. If there is no improvement in one-half to one hour as shown by blood gas monitoring, then use cautiously sodium bicarbonate 4 meq/kg for each 0.1 pH unit depression below 7.40. If there is no improvement in one hour, consider the use of Tham 150 mg/kg for each 0.1 pH unit below 7.40. Over-alkalinization may cause convulsions, coma, and death.

Drugs

The use of drugs such as detergents, alcohol, mucolytics and bronchodilators in respiratory care should be specifically ordered by the physician and not left to untrained, unlicensed therapists.

Diamox [Lederle] is used to treat respiratory acidosis with cerebral involvement. It promotes the renal excretion of bicarbonate, reduces excess cerebral spinal fluid bicarbonate, increases cerebral blood flow, improves the ventilatory response to carbon dioxide by resetting the medullary respiratory carbon dioxide chemoreceptors. It does cause carbon dioxide retention but this can be avoided by artificial ventilation.

The wetting agents Alevaire [Breon] and Tergemist [Abbott] are of no greater value than water or saline.

Humidification

In the use of humidity one must be aware of excess water absorption and interference with normal heat loss through the airway. Excess absorption is a real problem in people with renal failure. Normally patients lose heat by warming the inspired air and water. Excess humidification interferes with body heat loss by radiation, convection and conduction. This is especially true in a young child in a croupette; adequate humidification can be obtained without a croupette.

Ultrasonic nebulizers produce a high humidity, but not a particle size small enough to efficiently reach small bronchioles and alveoli. The average particle size is 6 micra. The ultrasonic nebulizer can deliver 8 to 10 liters/day, or about 10 mls of water vapor per minute. Its best use is with a tracheostomy tube for 5 minutes for thick secretions. In the asthmatic, sodium chloride rather than plain water should be used.

Heated aerosols are as good as an ultrasonic nebulizer for humidification.

Pulmonary clearance and defense mechanisms depend on the mucus of the lung having a certain viscosity. Excessive water lowers the viscosity, and pulmonary clearance by the ciliary mechanism is inhibited. Thus, the hazard of too much humidification by lowering the viscosity of pulmonary secretions and interfering with the normal pulmonary clearance mechanism.

Hydration and swelling of a piece of mucus can cause a partial obstruction to become complete.

Dry 100% oxygen can be very harmful to the lung surfaces. Even humidified 100% oxygen is toxic after several hours.

Further patho-anatomic correlations in cystic fibrosis, asthma, bronchitis and emphysema were described. Anoxia rather than vascular bed destruction correlated best with the development of right ventricular hypertrophy.

In the natural course of cystic fibrosis right ventricular hypertrophy develops early and bronchiectasis is an end result, but emphysema does not occur.

The clinical state characterized by the blue bloater correlates with centri-lobular emphysema and that of the pink puffer with panlobular emphysema. However, the clinical types overlap and the one speaker referred to the blue puffer and the pink bloater.

A study done at a Rhode Island hospital revealed that with normal preoperative pulmonary function only 7% had postoperative complications whereas those with abnormal preoperative pulmonary function test showed an incidence of 37% postoperative complications. Preoperative medical treatment with intensive physiotherapy decreased the postoperative complication rate considerably.

James M. Hofford, M.D.
Charles M. Bancroft, M.D.

ADOLESCENCE FOR ADULTS

The provocative title above is the name of an excellent booklet obtainable for the asking from Blue Cross-Blue Shield, or the Blues, as one of our friends calls the corporation. The theme of the book is that "adolescence is a very awkward age not only for adolescents, but also for adults."

Its varied contents are provocative as well as provoking, and the 15 authors who range from a Menninger to Arthur Schlesinger, Jr., include one genuine adolescent whose piece is entitled *You Force Kids to Rebel.* Included are discussions of their clothes, their music, their hostility, their pregnancies, their hang-ups, and ours.

Recommended reading for those over thirty, those under thirty, and all those in between.

EARLY DELAWARE PHYSICIANS

- This is the first in a series of little known early Delaware physicians.

I. THOMAS SPRY, Delaware Physician during the English-Colonial Period 1664-1776.

Thomas Spry on Nov. 7, 1676, became the first person in the Delaware River Valley to be licensed to practice law. He was also a doctor, but not the first of that profession. That honor belongs to Dr. Tyman Stidham, who practiced under the Swedes. Although little is known about Spry's early life, it is believed he was born in Devon, England, around 1620. He married as a young man and had one daughter, Sarah, before becoming a widower. He went to Virginia, probably in the early 1640's, and settled either there or in Maryland.

After the English took over New York from the Dutch, he went there and is first mentioned in official records in 1670 when he was a plaintiff in a suit in that city. While there he met and became friendly with Barent Egbertson and moved with him to New Castle. Spry apparently had received a good education and was widely read. He practiced medicine and surgery, but just how he acquired his knowledge of this profession or of the law is not known. In 1676 Governor Edmund Andros established the first court in the Delaware River Valley in New Castle.

One of the first notations of business transacted by this court reads: *"Ye worshippful court have granted Thomas Spry a license to plead some people's cases so long as the petitioner behaves himself well and carries himself answerable thereunto."* For the next five years Spry was busy appearing as an attorney, a witness or as a member of the jury in about 100 cases tried in New Castle and in a few others tried at the court in Upland, Pennsylvania. He continued to practice medicine during this time and is generally referred to as Dr. Spry and sometimes as Thomas Spry, the "chirurgeon." Shortly after Spry arrived in New Castle, Andros granted him 160 acres of land on the south side of St. Georges Creek which became known as "Doctor's Commons" and which he sold in 1680 to Jacob Young.

Barent Egbertson died shortly after coming to New Castle and Spry soon afterward married his widow, Rebecca, and assumed control of lands which had been granted to Egbertson. Records indicate that he was a highly respected member of the New Castle community, but could sometimes slip from grace. At one time Captain John Collier, commander of the garrison at New Castle, brought him into court and accused Spry of "shameful abuse with dirty and uncivil language" and of having broken a cane over his head. Spry testified that he could not remember committing such an offense "as he was much overcome with drink," but as there were witnesses to the attack he could only beg Collier's forgiveness. The court took a dim view of the apology, however, and fined him 200 guilders. This did not affect his standing in the community, as he was soon handling the cases of some of New Castle's most prominent citizens before the court, which often selected him to serve as foreman of juries. Spry was living in a house on Beaver Street in New Castle when he died in 1685.

Adapted from *Forgotten Heroes of Delaware* by W. E. Wilson, available from Deltos Press, Box 313, Cambridge, Mass., at $2.95 paper, $5.95 library buckram.

Editorials

SMOG IS MADE BY FOOLS LIKE ME —

Before the auto and the factory making the auto and the refinery making the gas to make the auto go, the amount of oxygen used by an individual was more or less equaled by the amount of oxygen given off by one average sized tree in the same time. No more, alas.

One jet plane round trip, New York to San Francisco, uses up 50,000 trees' worth of oxygen. The exhaust from three gallons of gasoline, twenty-five trees. Production of electricity, per person per day, twelve trees' worth.

Yet our smog is killing trees from the West to the East Coast. Was your Christmas tree a little stunted this year? Many from New Hampshire were smog-blighted to the point of unsalvability. (Just as some men are tougher than others, some trees are tougher than others. Dr. Russell Seibert, Director of Longwood Gardens, has a list of the trees most resistant to air pollution. Beginning with the Tree of Heaven the list moves along through the Indian Bean to end with the Northern Red Oak. The complete list is available from Longwood.)

The pollution of our environment promises to be of more concern in the seventies as man, already recognized as a political animal, is increasingly recognized as a horrifyingly polluting animal. But he is, so to speak, fouling his own nest. With nowhere else to go.

THE MORE THINGS CHANGE . . .

There's a famous French proverb which, roughly translated, says that the more things change, the more they remain the same as before. We were reminded of this saying recently when, in a taxi on a gloriously sunny day in Washington, D. C., we noted with a real sense of visual shock that from every flagpole along Constitution Avenue, the Houses of Congress silhoutetted proudly at the end of the beautiful avenue, the orange-red rising sun of Japan was flying along side of Old Glory — the occasion being the visit of Prime Minister Sato to President Nixon.

It also came to mind when we came across the following paragraph, spoken in 1932 by a European politician:

> "The streets of our country are in turmoil. The universities are filled with students rebelling and rioting. Communists are seeking to destroy our country. Russia is threatening us with her might. The Republic is in danger, danger from within and from without. We need law and order. Without that law and order our nation cannot survive. Elect us and we shall restore law and order."

The politician? Adolph Hitler. The more things change, etc., etc.

A MEDICAL CORPS FOR THE GHETTO?

Dr. Charles A. Ragan, Professor of Medicine at Columbia University, has a suggestion how to solve, at least partially, the problem of physician supply and demand in those areas of our cities where private practitioners are not apt to set up their offices.*

Why not, he says, establish a program where young physicians would serve in lieu of service in the military in areas where doctors are needed? Dr. Ragan specifies service within the inner city, but we wonder — if the numbers of doctors are sufficient — whether this form of medical service could not also be extended to service within non-blighted but professionally underprivileged rural areas? It could even be hoped that some of the young doctors who spent their time working in the doctor-less inner-cities or outer towns might even like their work well enough to settle down thereabouts and make a lifetime job of it.

"The need is great . . . the means are at least possible," says Dr. Ragan. We echo our approval and support his suggestion.

B.Z.P.

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* Proposal: A Ghetto Medical Corps in Lieu of Military Service, Resident and Staff Physician, Feb 1970.

Delaware Academy of General Practice

FAMILY PRACTICE RESIDENCY IN DELAWARE?

Simply stated, the chief aim of the American Academy of General Practice is to help supply the community with well-trained family doctors. Almost everyone will agree that this is a worthwhile objective. But the supply of family doctors has been drastically cut off in the recent past, and there are many reasons why. Chief among them is the denigration of general practice in the medical schools, where more and more students are "turned off" for general practice because they don't like the image.

Will the new Board of Family Practice help to change this? Will students be willing to spend three years in a residency program in order to be certified as a specialist in Family Medicine when they could spend the same amount of time and come out a "real" specialist?

We believe that it *will* make a difference and that there are in the medical schools now, and will be in coming years, students who would like to be family doctors, and who will be attracted to such residencies if they are available and if they are meaningful. The Delaware Academy of General Practice has as its chief objective for the coming year the establishment of such a residency at the Wilmington Medical Center whence future family doctors for the expanding population of Delaware already undersupplied will emerge.

The Delaware Academy of General Practice and the Medical Society of Delaware have both gone on record as supporting a Department of Family Practice at the Jefferson Medical College as well.

Dene T. Walters, M.D.
President

* * *

A bill authorizing 425 million dollars in federal funds to support training programs for family doctors and others in the field of family medicine was introduced in the U. S. Senate and House of Representatives simultaneously February 9 by Sen. Ralph Yarborough (D-Tex.) and Rep. Fred Rooney (D-Pa.).

Designated S 3418 and HR 15793, the bill provides for grants to be made by the Secretary of Health, Education and Welfare to (1) medical schools, (2) teaching hospitals, and (3) interns and residents who plan to make family medicine their specialty.

The bill covers not only financing the operation of training programs in family medicine but also construction of facilities designed to make such programs functional. Also covered are training programs designed to produce heads of departments and teachers of family medicine. In addition, the bill incorporates a provision for training paramedical personnel to work in the field of family medicine.

The appropriations schedule calls for 50 million dollars through the end of fiscal 1971, 75 million from then until June 30, 1972, and then 100 million dollars each year for the remaining three years through June 30, 1975.

Aides to both Yarborough and Rooney said they had worked with representatives of the American Academy of General Practice in drafting the legislation.

"Belief begins where science leaves off and ends where science begins."
Virchow

President's Page

IS THE DOCTOR AVAILABLE?

Shortly after the news was released on the alleged abuses by physicians in Medicare and Medicaid, an editorial appeared in the Philadelphia *Inquirer,* entitled "Regard for Doctors Sinks to a New Low." In this article the following statement was made: "The public has come to think of the average physician as a pompous, reactionary, money hungry business man who spends his day hours practicing questionable medicine and his evenings avoiding pleas for assistance from homebound patients and defending his singularly independent status." If this opinion is only 10% true, the physician's public image is still very poor.

Just recently a family member of one of my staff became acutely but not seriously ill on a week-end evening. The family doctor was not available, nor was his usual substitute. Many telephone calls were made to other physicians but to no avail. Finally a pediatrician friend was called for advice, and he, because of his friendship, obtained medical assistance.

Too frequently I am informed that patients in need cannot reach their physician nights or week-ends. In years past when the family depended so heavily on the family doctor, he was always available, and he felt responsible to his patients. Have we gone so far with the splintering of medical practice that we no longer feel responsible for "our" patients?

By the time this page is read, the Peer Review and Professional Evaluation Committees of the County and State Societies should be operational. In time these committees should demonstrate to the public that physicians are seriously interested in providing the best possible health care at a reasonable cost. I wonder if our image will improve through informing the public that our physicians are continuing their education in order to provide high quality care and they are exercising restraint in fees, when patients continue to find that some physicians are "off-call" without the provision of an adequate substitute?

I feel the time has come when the practicing physician must prove to his patients that excellent care is available to them at all times, not just during "business hours." The public could then elevate their regard for the doctor to that enjoyed in the days of the family physician. In addition, as a bonus, if the patients could be sure of getting a physician whenever they call, there would be no need for the emergency call plan of the New Castle County Medical Society. Private physicians now on duty in the hospital emergency rooms could handle the few emergency calls from visitors to the community and others who have no physician for other reasons. The money thus saved the County Society could be used for worthwhile purposes such as the Student Loan Fund of the Medical Society of Delaware or the Delaware Academy of Medicine.

I would hope that all physicians in the private practice of medicine throughout the State of Delaware will always be available to their patients through arrangements with other physicians for adequate coverage when off call.

Henry H Stroud

Letters to the Editor

To the Editor:

I read with great interest but little admiration Stephen Paget's excerpt from Confessio Medici, Chapter 7:

"... I wish you therefore, young man, early in your career, a serious illness, or an operation, or both. For thus, and thus alone, may you complete your medical education, and crown your learning with the pure gold of experience."

If the admonition to the young physician to experience a severe illness or operation early in his career, is to be carried to its natural conclusion, then each lawyer should be urged to spend six months in jail, so that he too can experience the trials of his least successful client.

Carl I. Glassman, M.D.

Ed. Note: We don't know how the lawyers would feel about it, but we think it perhaps a good idea.

B.Z.P.

To the Editor:

Dr. Ethan Allen Brown recently wrote an editorial for the Review of Allergy entitled *Hay Fever Is Not What It Once Was*. In it he discusses the increasing severity, duration, and refractoriness to therapy of his patients with hay fever.

"Except for the periods of pollen seasons, they were the easiest and healthiest people in the world to see and treat. I am sorry to note that in my personal practice and in those of my colleagues, this fact is no longer true.

"Some of my present patients, who as far as we know are not sensitive to any other inhalant than ragweed pollen, will return during the winter months when there is snow on the ground and complain of symptoms so similar to those of their hay fever that we must repeat their skin tests only to discover that there are no new reactions."

Dr. Brown attributes this change in the pattern of hay fever to increased air pollution, and I share his opinion for I can corroborate his observations from my own allergy practice and its changed nature over the past twenty years.

Wilmington is the 15th dirtiest city in the United States. This problem of air pollution must be important.

Charles M. Bancroft, M.D.

To the Editor:

Each month social security disability benefits totaling $180 million are paid to over one and one-third million disabled workers, over one million of their dependents. In addition, one-fourth million disabled sons and daughters of retired or disabled social security beneficiaries or workers who have died and 32,000 disabled widows and widowers are receiving monthly payments.

Even with two million people currently on the disability rolls, some people have not applied because they are unaware of some of the important changes that have been made in the program in the past five years.

Until 1965, disability benefits were payable only to workers with disabilities that were permanent. But in 1965, the definition of disability in the law was changed. A person is now considered disabled if he is suffering from a physical or mental condition which has lasted or is expected to last for 12 months or more and which prevents him from engaging in any substantial gainful activity. Large numbers of people became eligible for benefits as a result of the 1965 change, and more were added as a result of other important changes made by the 1967 amendments.

One 1967 change reduced the amount of work required for younger people to qualify for social security disability benefits. Now, a worker who becomes disabled before 31 needs social security work credits for less than five years of work, and a worker disabled before he is 24 can become eligible with credit for as little as a year and a half of work. This change in the law made about 100,000 young workers eligible for benefits. Others who benefited from changes made in the 1967 amend-

Continued on page 107

Deaths

DR. JOHN B. K. SMITH

Dr. John B. K. Smith, age 62, died in New Jersey on February 4, 1970. He had been superintendent of Delaware State Hospital from 1965 to 1969.

Dr. Smith was from Scotland. He received his medical training at the Glasgow University and practiced neurosurgery there before coming to the United States in 1952. In the United States he also had held positions on the faculties of Duke University, Jefferson Medical College and the New Jersey College of Medicine.

Since leaving the Delaware State Hospital he had been executive director of Ancora State Hospital in Hammonton, New Jersey. He is survived by his widow, Mrs. Joan Smith, and his mother and brother, still residents of Scotland.

DR. KENNETH M. CORRIN, SR.

Dr. Kenneth M. Corrin, Sr., died on February 10, 1970, at age 71. He had been in Delaware practicing neurology and psychiatry for thirty-two years.

Dr. Corrin was from Colorado and took his undergraduate work at Colorado State College, graduating in 1922, and then going to Jefferson Medical College, where he received his M.D. in 1926, and took postgraduate work in neurology. In Philadelphia he was on the staff of Philadelphia General and St. Agnes Hospitals, and on the faculty at Jefferson Medical College.

Dr. Corrin came to Wilmington in 1938 as psychiatrist for the mentally retarded at Stockley, then left this post for private practice of neurology and research in epilepsy.

He is survived by his widow, Mrs. Mary B. Corrin, two sons, Dr. Kenneth M. Corrin, Jr., practicing in Wilmington, and Dana S. Corrin, a daughter, Mrs. Allen Cowan of Wilmington, and seven grandchildren.

DR. NINA BUBLEJ MCHITARIAN

Dr. Nina Bublej Mchitarian, of the staff of Delaware State Hospital, died on December 23, 1969. She had been practicing psychiatry at the State Hospital since she moved to Delaware in 1964.

Dr. Mchitarian was born in Poland in 1906. Her college work was done in Nowogrodek, and medical studies at St. Batory University, Wilno, Poland, where she received her M.D. in 1931. She practiced in Poland from 1933 to 1944, then in Germany from 1944 to 1949.

Dr. Mchitarian came to the United States and started practice in Chester, Pennsylvania, in 1949, then was in New York from 1951 to 1963, before coming to Wilmington. She is survived by her husband.

* * *

LETTERS TO THE EDITOR

Continued from page 106

ments were disabled widows and widowers 50 to 60 years of age.

But the responsibility of the Social Security Administration extends beyond paying cash benefits to those that qualify. Social security also encourages the rehabilitation of disabled people.

The program has several built-in incentives to encourage beneficiaries to return to work. All claimants whether their claim is allowed or denied are considered for rehabilitation services.

Also, every beneficiary is given a trial work period if he attempts to return to work. During such a trial, a beneficiary (other than a disabled widow or widower) who has not recovered medically has an opportunity to test his ability to work on a sustained basis without fear of permanent loss of benefits if he should not succeed.

Robert A. Katz
Field Representative,
Social Security Administration, Wilmington

In Brief

New Classified Section in Journal

We hope to establish a classified section in the Delaware Medical Journal in the near future. "Physician wanted" ads will be listed without charge. All others:

Rates: 30 words, set solid. One insertion, $4.00.

Closing Date: Advertisements must be received by mail by the first of the month for inclusion in the current issue.

Terms: All advertisements payable in advance to Delaware Medical Journal, 1925 Lovering Avenue, Wilmington, 19806.

Speakers on "Ask the Doctor"

Speakers for May, 1970 on the Tuesday radio program (11:05 a.m. WDEL) produced by the Medical Society of Delaware are: May 5, Joseph E. Belgrade, M.D., *Breast Tumors;* May 12, Lawrence Katzenstein, M.D., *Acne;* May 19, Jerome Kay, M.D., *Anxiety;* May 26, Joyce Anderson, M.D., *Parkinson's Disease.*

In The News

David J. Krigstein, owner and operator of the Prescription Center, has been honored by the Philadelphia College of Pharmacy and Science at the Founders' Day Convocation with a master of pharmacy degree. Krigstein is secretary of the Delaware Board of Pharmacy and a member of the American Council on Pharmaceutical Education.

34 Years of the Blues

Group Hospital Service, Inc. (now Blue Cross and Blue Shield of Delaware, Inc.) was formed as a non-profit community organization in 1935 with H. V. Maybee as managing director. For thirty-four years it has continued to grow under the direction of Harold V. Maybee, now retired. On January 12 at the Hotel DuPont he was honored by representatives of many fields for his thirty-four years of dedicated service and presented with a scroll.

The Month in Washington

Marijuana

The National Society for Medical Research says that no valid finding on the effects of marijuana can be expected for another two to seven years. Part of the difficulty is that there is no standard yardstick for evaluating marijuana in scientific studies. The basic weed from which marijuana is made can vary from plant to plant and from country to country. But the Society cautioned in a statement: "Until scientifically proven results are obtained, it appears as foolhardy to smoke marijuana as it would be to take any other unknown drug or chemical agent just for kicks." Two projects are now going on in an effort to achieve scientific standardization in marijuana studies.

Heroin

The federal government has negotiated new agreements with France and Turkey aimed at stemming the flow of heroin into this country. John E. Ingersoll, director of the Bureau of Narcotics and Dangerous Drugs, estimated 80% of the 2.5 to 3 tons of heroin smuggled into the U.S. annually comes from the poppy fields of Turkey via the clandestine laboratories of France where the opium is refined into heroin.

The agreement with Turkey includes a $3 million loan approved by the agency for international development in 1968. The money is to be used partly to help the Turks substitute crops like sugar beets and sorghum for opium and partly to equip and train a 460-man narcotics police force. The U.S. agreement with France calls for frequent meetings in Washington, D. C. and in Paris to exchange information on such matters as the known traffickers and trafficking routes.

CLINICAL NOTICES AND MEETINGS

Infectious Disease Symposium

The 7th Annual Infectious Disease Symposium sponsored by the Delaware Tuberculosis and Health Society, the Delaware Academy of Medicine and the Wilmington Medical Center will be held at the Academy of Medicine, May 5 to 8, 1970. Included among the speakers will be Richard A. Kahlbaugh, M.D., Martin Randolph, M.D., and Lewis B. Flinn, M.D. Also included will be the Gerald Beatty Memorial Lecture. Dr. Gerald A. Beatty, who died in June, 1968, was well known as a specialist in chest diseases and was twice president of the Medical Society of Delaware and president of the Delaware Tuberculosis and Health Society for sixteen years. In memory of Dr. Beatty, the Delaware Tuberculosis and Health Society has established this annual lectureship to be given in May of each year at the time of the Infectious Disease Symposium.

Physician-Nurse Conference

An all-day physician-nurse conference, Teamwork, Logistics and Communications Leading to Tender Loving Care, sponsored by the Medical Society of Delaware in cooperation with the Delaware Nurses' Association and the Delaware League for Nursing will be presented at the Delaware Academy of Medicine on May 13, 1970. Gertrude Cherascavich, R.N., will speak on *Routines Disappear in a Clinical Nursing Practice;* William Barba, M.D., the Acting Dean, School of Medicine, Temple University, on *The Trends of Change in Medical Education.*

Grace Weiss, R.N., Sister Joseph Leo, R.N., Elizabeth Roeder, R.N., and Mary K. Carl, Ph.D., will speak on the nursing educational programs in Delaware.

David Platt, M.D., Pierre L. LeRoy, M.D., and James Aikins, M.D., will present the relationship of nursing to the practice of medicine.

Group conferences will pursue: 1) Strengthening Nurse-Physician Relationships, 2) Educational Programs, and 3) Utilization of Man-Woman Power.

Luncheon will be provided by the Medical Society of Delaware, but an advance reservation is required. The registration fee is $1.50. Send checks to the Medical Society of Delaware, 1925 Lovering Avenue, Wilmington, 19806.

Program on Physicians' Assistants

The Health Care Delivery Committee of the Medical Society of Delaware will present a program on *Physicians' Assistants,* Wednesday, May 20, 1970, 7:30 p.m., Delaware Academy of Medicine. Keynote speaker will be Leonard Fenninger, M.D., Associate Director for Health Manpower, NIH, Bethesda, Maryland.

Bernadine Z. Paulshock, M.D., and Marjorie J. McKusick, M.D. will discuss the informational conference on *Physician Support Personnel in the '70's: New Concepts,* held March 19, 1970 in Chicago.

Anyone interested in this topic of current interest is urged to attend.

Clinical Center Study

The cooperation of physicians is requested in the referral of patients with known or suspected intestinal malabsorption secondary to nontropical sprue or Whipple's disease. Patients with malabsorption of undiagnosed cause are also of interest. Physicians interested in having their patients considered for admission to this study may write or telephone collect: Dr. Leonard Laster, or Dr. Z. Myron Falchuk, Clinical Center, Room 9D-20, NIH, Bethesda, Maryland 20014, Tel. 496-4201 (301).

Symposium on Liver Disease

A Symposium on Liver Disease will be conducted by the Fitzgerald Mercy Division of the Mercy Catholic Medical Center Wednesday, May 6, in the Division's Medical Science Building in Darby, Pennsylvania. It is open to physicians, residents, interns and medical students. Registration begins at 8:30 a.m.

Postgraduate Trauma Course

Fractures and other trauma will be the subjects of a three and one-half day postgraduate course May 13-16, to be held at the John B. Murphy Auditorium, 50 East Erie Street, Chicago, Illinois, and sponsored by the Chicago Committee on Trauma of the American College of Surgeons. Forty-five faculty members will cover orthopaedic, general surgical, neurosurgical, urologic, and plastic surgical subjects. To register, write to James P. Ahstron, Jr., M.D., Program Chairman, American College of Surgeons, 55 East Erie Street, Chicago, Illinois 60611.

Drug Abuse in Industry

"Does industry have the right to examine new employees for drug abuse?" and *"How serious is the drug abuse problem in industry?"* are among the questions that will be discussed at a symposium on Drug Abuse in Industry, May 17-19 at the Marriott Motor Hotel in Philadelphia. The symposium is being sponsored by the Boeing Company, Vertol Division; Campbell Soup Company; Industrial Medicine & Surgery Journal; Scott Paper Company; Smith Kline & French Laboratories; and the Sun Oil Company. Further information can be obtained from Drug Abuse in Industry Symposium, Dept. WJS-E60, 1500 Spring Garden Street, Philadelphia, Pa. 19101.

Medical Society of N. J. Meeting

The Medical Society of New Jersey extends a cordial invitation to out-of-state or non-member physicians to attend the scientific sessions of their Annual Meeting to be held in Haddon Hall, Atlantic City, May 16-19.

International Cancer Congress

The Tenth International Cancer Congress of the International Union Against Cancer will be held in Houston, Texas May 22-29. Hosts are the University of Texas M. D. Anderson Hospital and Tumor Institute and the National Academy of Sciences. Four Preliminary Special Sessions of the Congress are scheduled May 22-24 in four designated hotel complexes. The Main Congress will be held in the Houston Civic Center and surrounding downtown hotels. For further information write: Tenth International Cancer Congress, P. O. Box 20465, Astrodome Station, Houston, Texas 77025.

Mental Health Seminars

Two Mental Health Lecture-Discussion Seminars are being presented at the Sussex County Mental Hygiene Clinic, Georgetown, Delaware. On May 21, Lawrence S. Kubi, M.D., will discuss *Neurosis and Psychosis* and on June 25, Monsignor Theodore A. Opdenaker will discuss *Wholesome Family Living*. The series is being offered as a community educational program by the University of Delaware in cooperation with the Delaware State Department of Mental Health to health agency workers and other interested personnel. All lectures are from 10:00 a.m. to 12:00 noon and admission is free.

Abstracts of Heart Papers

The deadline for abstracts of papers and applications for scientific exhibits and cardiovascular films to be considered for presentation at the American Heart Association's 1970 Scientific Sessions is June 5, 1970. The four-day meeting is November 12-15 in Atlantic City.

Papers intended for presentation must be based on original investigations in the cardiovascular or related fields. The project's results and the investigator's conclusions should be summarized in the abstract and submitted on official AHA forms. For further information write the Department of Medical Education, 44 East 23rd Street, New York, N. Y. 10010.

ACP Course

Th American College of Physicians announces a course in *Clinical Aspects of Infectious Diseases* to be held May 20-22, 1970 at the University of Washington School of Medicine, Seattle.

For further information write: Edward C. Rosenow, Jr., M.D., Executive Director, American College of Physicians, 4200 Pine Street, Philadelphia, Pa. 19104.

National Convention

The Student American Medical Association 1970 National Convention will be held May 5-9 at the Bellevue Stratford Hotel, Philadelphia, Pa.

THE FORUM

Environment And Health

CANCER AND THE ENVIRONMENT

Richard P. Mason, M.D.

Environmental chemicals have been regarded with suspicion as possible carcinogenic or co-carcinogenic agents from the time (1775) that Dr. Percival Potts, a British surgeon, observed the association between scrotal cancer and soot in chimney sweeps.

A wide range of occupationally-induced cancer has been recognized during the past half-century: bladder cancer in the aniline dye and rubber industries; lung cancer among men working with uranium ore, nitrogen mustard, chromate dust and nickel dust; nasal-sinus cancer in wood-workers; pleural and peritoneal mesotheliomas in asbestos workers; and skin cancer in shale oil workers.

Cigarette smoking has been definitely established as a cause of lung cancer; a high incidence of oral cancer in Asia is associated with betel-nut chewing; a high incidence of liver cancer in Guam is probably due to dietary contamination with aflatoxin; the high incidence of gastric cancer in Japan, Iceland, and Chile appears to be associated with a high dietary intake of fish possibly contaminated with nitrosamines.

More than 600 compounds have been identified which are known to be carcinogenic in animals, a large proportion of these falling into the classes of cyclic hydrocarbons, azo dyes and nitrosamines. From their carcinogenicity in animals it is logical to suspect their carcinogenic potential in humans. The atmospheric environment is known, for example, to contain substantial quantities of cyclic hydrocarbons resulting from incomplete combustion of oils, coal, auto-fuel, and factory gas products and by-products.

Large scale epidemiological studies conducted by the American Cancer Society have implicated cigarette smoking not only in lung cancer but also in emphysema, bronchitis and cardiovascular disease. They have also established a considerably lower life expectancy and a higher death rate from all causes taken together for smokers; both effects are directly related to the amount of smoking.

The etiological role of cigarette smoking in lung cancer has been confirmed in human necropsy studies of retrospective design and recently, invasive broncho-alveolar tumors have been produced in dogs by experimental cigarette smoking. Pathologic evidence has thus confirmed epidemiologic findings.

Epidemological studies conducted in association with the American Cancer Society have also demonstrated that there is a much higher than normal risk of lung cancer among asbestos workers and that this risk rises steeply among asbestos workers who smoke.

In a related study preliminary findings tend to indicate that roof workers exposed to benzpyrene, a cyclic hydrocarbon present in the fumes of hot asphalt and hot pitch, do not have a higher risk of lung cancer than other men.

Dr. Mason is the Senior Vice President for Research of the American Cancer Society.

This page is sponsored by the Delaware Tuberculosis and Health Society.

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

PHENOTHIAZINES

Cardiovascular Complications

Reports have appeared in the medical literature regarding electrocardiographic changes induced by psychotropic drugs. Such changes have been reported with almost all phenothiazines and also with the closely related compounds, imipramine and anitriptyline. Sudden unexplained death in otherwise healthy psychiatric patients receiving phenothiazines in relatively large dosage has also been noted. These reports have been published in journals not regularly read by the internist or cardiologist and have failed to alert these physicians to the cardiac complications which may ensue during long-term administration of these drugs. The present authors observed seven young patients in whom cardiovascular or electrocardiographic abnormalities were encountered during prolonged treatment with phenothiazines or related compounds. Partial or complete correction of the abnormalities was accomplished in some patients by stopping the drug. One 29-year-old patient developed recurrent biventricular congestive heart failure after prolonged administration of phenothiazines and imipramine. Myocardial biopsy material revealed structural abnormalities of mitochondria suggesting a metabolic basis for the cardiomyopathy. Another patient continues to have recurrent bouts of congestive heart failure. The situation is quite frustrating because the majority of patients require continued treatment with these drugs because of severe psychiatric disturbance, making impossible a more complete evaluation of the cause-effect relationship between these compounds and the cardiac syndrome produced.

Alexander CS and Nino A: Am Heart J 78:757, (Dec) 1969.

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Delaware
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OUR HEALTH CARE SYSTEM:

The Government Viewpoint

• To preserve the pluralistic, independent, voluntary nature of our health care system, this author says we must make it work for every American — no matter what his station in life, or where he lives.

Cornelius M. Bowen, M.P.A.

This nation is faced with a breakdown in the delivery of health care unless immediate concerted action is taken by government and the private sector. Expansion of private and public financing for health services has created a demand for services far in excess of the capacity of our health system to respond. The result is a crippling inflation in medical costs causing vast increases in government health expenditures for little return, raising private health insurance premiums and reducing the purchasing power of the health dollar of our citizens.

As examples of the situation inherited by the present administration: Medical costs are rising at more than double the increase in the cost of living. Physicians' fees, which were increasing at a rate of about 3% a year up until 1965, have since the introduction of Medicare and Medicaid been rising at 6% a year. The expense of one day's stay in a hospital, not including a physician's care, has gone from $44 in 1965 to a figure which is expected to reach $80 this year. Within two years at the present rate of inflation, hospital expense may hit $100 a day. The Medicaid program is costing $2½ billion a year in Federal funds alone, more than double the estimates made at the time of its passage.

Badly conceived and badly organized, the Medicaid program has attempted to provide medical service for the poor by pushing them into the nation's already overburdened health care system without developing the capacity in the system to serve them and without building the capability in the states to manage the program. As a result, by 1975 at the present rate of increase, federal costs for Medicaid could go as high as $12 billion per year with the states paying an additional $12 billion. And this on top of a federal expenditure for health which today is larger than the entire budgets of each of the Departments of Agriculture, Commerce, Housing and Urban Development, Interior, Justice, Labor, Post

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Mr. Bowen is Assistant Regional Health Director for Planning and Evaluation, Department of Health, Education, and Welfare, New York, New York.

This address was delivered at a meeting of the Health Care Delivery Committee of the Medical Society of Delaware on February 18, 1970 at the Delaware Academy of Medicine.

Office, State, Transportation and Veterans Administration. The federal health budget in fact now exceeds the total national budget of all but eight nations in the world.

Our overtaxed health resources are being wastefully utilized, and we are not adding to them fast enough to keep pace with rising demand. Our health priorities are critically out of balance. Our incentive systems all lead to overuse of high-cost acute-care facilities, while the need increasingly is for lower-cost alternatives. We emphasize spectacular achievements in the healing arts, but have given too little attention to the prevention and early care of illness, which must be the first line of attack on our health problems.

Faced with this extremely difficult situation, we nevertheless cannot abandon our national goal of effective and dignified health care for every American no matter what his station in life or where he lives. We cannot accept anything less in this the most affluent society in the world. As long as there are people in this country who are denied essential health services because of poverty, or race, or lack of access for any reason, we have fallen short of our promise as a nation.

Steps to be Taken

Our task now as a nation is to acknowledge the extreme urgency of the situation, to take certain steps to arrest the inflation that is paralyzing us, and to put into motion initiative that ultimately will reshape the system. This task is obviously not one for government alone· although government has a major role to play. Much of the burden must be taken up by the private sector since it has the primary responsibility for the delivery of health care. Unless government and our vast array of private institutions can learn to work together we cannot succeed. The faults in the past have been shared by both. Too often government has operated independently, and even blindly. Medicaid was launched without adequate preparation, with a staff of only 80 people to manage $2½ billion in expenditures, and with no provision for expansion in the nation's capacity to meet the increased demand for health services thus created. And too often the private sector has been reluctant to give up outmoded practices that are unsuited to the incredibly rapid changes of our society to meet new demands and increased demand.

This administration is committed to correcting these past failures of government, and to challenging the private sector to begin the process of revolutionary change in medical care systems. To this end we have taken the following administrative and legislative actions:

- we have eliminated the allowance to hospitals and nursing homes for unidentified costs;
- we are enforcing regulations limiting payment to individual practitioners under Medicaid;
- we are increasing reviews of drug utilization, drug pricing, drug efficacy and safety;
- the Public Health Service is promoting alternative medical care facilities;
- we are requiring tighter, more frequent reviews of hospital care for patients;
- we are requiring that physicians be identified by Social Security number in all Medicare and Medicaid transactions in order to assist in the audit and review of those transactions;
- with the help of the Department of Defense, we have initiated Operation MEDIHC (Military Education Directed Into Health Careers), designed to assist in alleviating serious manpower shortages by recruiting into education and/or employment for civilian health careers, discharged servicemen with experience in health occupations;
- we have proposed legislation under Medicare and Medicaid to bar from participation practitioners who have consistently abused the program; to gain greater flexibility to engage in incentive reimbursement and demonstration projects; to withhold reimbursement for facility expenses incurred contrary to regional or local planning for health care facilities; and to insure that government does not pay more for services than the charges to the public at large;

- we have proposed legislation to shift emphasis of the Hill-Burton hospital construction program to the development of facilities for preventive care, outpatient care, and to the modernization of inner-city hospitals;
- we are moving in the direction of reducing the Medicaid burden on general revenues by shifting to various forms of prepayment;
- the Secretary established a Task Force on Medicaid and Related Programs under the leadership of Under Secretary John Veneman and Mr. Walter J. McNerney, to deal immediately with the crisis in that program. Under date of November 12, 1969, that task force submitted an interim report which, among other things, indicates that:

We need to remove state-by-state variations in Medicaid and in the scope of services provided under the program if we are to achieve the goal of furnishing comprehensive care and services to all individuals who are needy and medically needy, by 1977.

A strong, specific and comprehensive federal policy should be developed which would require the states to establish Medicaid program effectiveness systems.

A central policy-planning and coordinating staff should be established within the office of Assistant Secretary for Health and Scientific Affairs to provide a corporate-staff capability for health matters.

These steps will insure that the federal government gets more for its health dollar. But the major portion of the health care dollar is not spent by government. It is spent by and on behalf of private consumers through voluntary insurance and personal expenditures in the private sector. Millions and millions of health care transactions occur every day in which the determining factors are utilization and pricing decisions made by private individuals, by physicians and other professional persons, by industry and labor and by voluntary institutions. Neither government decisions nor government review is a determining factor in these transactions.

We must insure that the private consumers in these actions receive adequate services at a reasonable price. This requires a major commitment by the varied segments in the private health care industry to drastic changes in the industry. To this end, we will ask national, state and local organizations to assume new responsibility for leadership in promoting such change. A good part of the job is theirs to do, and with great urgency.

Coverages to Additional Groups

In particular, we ask and challenge the health insurance industry, including nonprofit insurers, to mobilize to expand coverages to additional groups, to provide broader and more effective coverage, to change coverage to encourage preventive services, to provide incentives to keep people out of hospitals and other high cost facilities, and to play an active role in monitoring the excessive use of scarce facilities, such as hospital beds.

We ask and challenge the physicians, dentists, and other practitioners of the nation, through their professional societies, to establish procedures to review the utilization by their members of various services; to review in particular the use of nursing homes which now absorb one-third of the $5 billion expended on Medicaid by federal and state governments; to encourage utilization by their members in all instances of less expensive types of care; and to discipline those who are involved in abuses.

We ask and challenge the hospitals of the nation through their boards of trustees, their administrators, and their organized medical staffs, to review and revise their procedures for admissions and discharges so that no patient stays longer in an acute facility or long-term facility than is absolutely necessary; and we ask them to work with other hospitals in the community to promote management efficiency, to share equipment and services, and to reduce the unnecessary duplication of facilities.

We ask and challenge the deans and faculties of professional schools and all who are involved in the education and training of professional manpower to find new ways to expand the number of persons they are training, to shorten the time needed for training and to orient their training more towards the immediate needs of the country, such as comprehensive medical care for the poor and near poor.

We call upon the governors and state legislatures to re-examine and evaluate the role of state health departments in improving the delivery of health services and to review state requirements for licensing and certification which stand in the way of the proper use of scarce manpower.

We demand of ourselves and the federal government, in general, that we put our own house in order, including reviewing the role and performance of federal hospitals and health programs.

We call upon citizens' groups and consumer organizations to continue their efforts to hold the medical care industry and government responsible for good management and for constructive policies in delivery and pricing of services.

We ask and challenge American business to involve itself in the health care industry, including the creation of new and competitive forms of organization to deliver comprehensive health services on a large scale in what has been up to now largely a cottage industry.

We have created a special industry group under the chairmanship of Mr. David J. Mahoney, President of Norton Simon, Inc., to develop and stimulate industry programs to provide health education and preventive health care for employees at every level and their families.

Over the coming months we will call together each of these groups to hear what they propose and to learn what they will expect of us in return. Many dedicated persons among them are already working towards these goals. We have much to learn from them. What we will ask of all is that their efforts be greatly broadened and intensified.

This country has made achievements in the quality of care beyond anything that could have been imagined at the turn of this century. It is that very success that has brought us to the present test of whether we have the capacity to extend that same quality of care to all in society at a price which they can afford. What is ultimately at stake is the pluralistic, independent, voluntary nature of our health care system. We will lose it to pressures for monolithic government-dominated medical care unless we can make that system work for everyone in this nation.

* * *

HOW TO SCHEDULE FREE TIME

One of our colleagues, finding himself desperately scheduled with a committee, journal club, or community service meeting every evening of one week, decided upon a new method of allocating his time. He used his horoscope in the evening paper.

Monday night he was advised, "Fulfill your obligations to the best of your ability," and attended his meeting.

Tuesday's advice was, "Your first duty is to your family," and he stayed home.

Wednesday night the oracle said, "Romance is in the offing," and his wife made him stay home.

On Thursday, "Excitement is on the horizon," sent him cheerfully off to a hospital departmental meeting before his wife could read the paper.

Friday's column told him, "Consider the alternatives carefully." It was his wife's turn to entertain her bridge club, and he had little problem in preferring to go to the Library Committee of the PTA.

He now swears by the system.

CANCER, EMOTIONS, AND NURSES

• **Staff reactions to patients on a cancer ward must be adjusted in order to change the attitude of the patients towards their illness. The following paper describes such an attempt.**

Samuel C. Klagsbrun, M.D.

The small cancer research unit in a major East Coast university hospital was unique in many ways. It was tucked away in a corner off a main corridor and was screened in by a glass partition that architecturally demonstrated its separateness. It was the only service to which no house staff was assigned. And it was the only service in the hospital that had little hope for success in its struggle to ward off death.

The patient population was selected for research purposes. If a patient experienced a remission, he was discharged to the outpatient clinic and followed by the same medical and nursing staff that worked on the inpatient unit. The entire staff got to know the patients, their families, and their friends.

The psychiatric consultation service of the hospital had been called in from time to time by the cancer research unit to help in the management of difficult patients. We became aware of the tremendous strain the patients placed on the medical and nursing staff. To a great extent the staff saw these patients as walking dead; and since "one should not speak ill of the dead," the staff felt constrained to keep their feelings about the patients to themselves. But the angry feelings and guilt at having those feelings did exist, and were very evident in the approach of the staff toward the patients. There was covert rejection of the patients' emotional needs, especially in the face of terminal illness. Numerous struggles between patients and staff took place over such medical issues as the side effects of some of the experimental drugs being used. The patients complained of being used as guinea pigs.

This was the setting, then, in which the following pilot project was attempted.

I decided that the best approach to use was to try to alter the ward culture as a whole rather than deal with each patient management problem separately. The assumption was that the patients' morale and behavior could be improved greatly if they could continue to see themselves as functioning and productive human beings. Meeting these goals would require the creation of an anti-regressive atmosphere. And the creation of such an atmosphere would depend largely on the nursing staff. The nurses spent much more time with the patients than anyone else; therefore their impact was likely to be more pervasive than anyone else's influence on the patients.

My first job was to make the nurses aware of the importance of their role. After receiving clearance from the medical staff, I began to hold weekly meetings with the nursing staff. The initial object of the one-hour-a-week meeting was to discuss patient management problems. No hint or suggestion was

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Adapted from an address by Dr. Klagsbrun to the New Castle County Medical Society. This address was also delivered to the American Psychiatric Association in May 1969 and appeared in original form in *The American Journal of Psychiatry*, volume 126, pages 1237-1244, 1970.
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made to indicate that the ultimate object was to deal with the ward culture or with the nursing staff's feelings toward the patients. The reaction of the staff to the appearance of a psychiatrist in their midst was an uneasy one. They were gratified to have this effort made on their behalf by a medical service of the hospital, but they also felt self-conscious and somewhat threatened.

The head nurse, an extremely competent and perceptive person, broke the ice one day by saying, "Now look, ladies, this is a psychiatrist. Why don't we tell him things he's supposed to know about?" With that, a flood of feelings began to come out.

Once the nurses' role was clarified, they began to look at their patients in a more critical way. They became less frightened of being put upon and therefore more open to learning. The methods patients used in expressing their needs were recognized more quickly. Management problems were analyzed from the point of view of "What's the patient really asking for?" The nurses became sophisticated in recognizing subterfuges for the expression of anxiety. The number of complaints, calling for nurses, turning of nighttime into daytime, repeated questions about what is really in the I.V. bottle — all these were now understood as expressions of fear, and the nurses became quite free in calling the shots as they saw them.

"Let's talk, Mrs. Jones; you really don't need the bedpan again, do you?"

"I know you didn't call, Mr. Brown, but you look sad. Anything I can do?"

The nurses were encouraged to seek out contact before the patients created a crisis situation that required their presence. They now understood that symptoms were often communications on a non-verbal level. In addition, my willingness to use more tranquilizers and anti-depressants gave them a sense of confidence. They knew that methods of control were readily available in case of severe agitation and depression that they felt unable to handle. They experienced a marvelous new sense of freedom and openness. "When I told Mr. Smith that if I were in his shoes, I'd be asking many more questions than he was asking," reported one nurse, "I could actually see the tension coming out of his face."

This free and easy approach, however, soon led to complications. Patients were now communicating their worries with the nurses, and many of them asked fairly direct questions about their prognoses. The nurses felt comfortable in talking openly to the patients about anxiety or depression, but they felt that they were overstepping their boundaries when patients started asking them about diagnoses, prognoses, and medications. The most frequent question raised was what to tell the patient in response to the question, "Am I going to die?"

The experienced nurses, who really understood their patients and the patients' families, could judge what answer was expected of them.

On Facing Death

One example was that of a husband who had refused to bring his sick wife to the hospital because he was sure that the staff would tell her her diagnosis, and he was convinced that she would not be able to tolerate the truth. His wife, on the other hand, asked the nurses not to tell the husband that she had cancer because she was sure that he needed to protect her from the truth, since that helped his manly image. But she also knew that he would probably be unable to keep it to himself and would feel terrible if he blurted it out to her. She was trying to protect him. The nurses had no difficulty in refraining from talking to him about her illness while listening and talking to the patient about how she was doing.

A second example of courage coupled with wisdom was one reported by a nurse the day after a sad experience. An old Italian woman who was failing rapidly called in one of the nurses and said simply, "I am dying. I feel it is the end, isn't it?" The nurse looked at her and said quietly, "Yes." The nurse sat down next to the old woman, took her hand and held it. "I don't want to die alone", the woman said. "I'll stay with you. You won't be alone," the nurse answered. The woman said, "That's good." And she died in 10 minutes, with the nurse holding her hand.

Now everybody was ready for the next step: a radical experiment in self care. Many of the patients who were in bed didn't really need to be there for medical reasons. They simply retired to their beds as part of their withdrawal. The nurses had come to understand that. They began reorganizing the unit. They urged patients to take passes and to leave the ward. They made demands on the patients by asking them to get involved in projects, such as sewing and art work. As much as they could, they pushed the patients into activity.

The patients' reaction to the new hustle-bustle varied. Those patients who saw themselves as terminally ill at first resented the expectation that they could take care of themselves. They saw it as further evidence that they were being abandoned by the world. On the other hand, those who found themselves grasping for any bit of evidence that proved that they were not sick — or at least not dying — quickly latched onto the new idea that they were still responsible, functioning, and productive people.

This group, in fact, began edging the nurses out of jobs, and taking over some of the nursing tasks. For example, one of the first changes made in the ward was to have the patients fix their own beds. Next they were to get their own water and ice. The nurses were a bit fearful of this revolutionary step, and they were upset when the sick patients saw it as a rejection of their needs. But the patient-activists on the ward surprised everybody. They began taking the water and ice to the patients who were too sick to care for their own needs. Then they took over the linen closet and made up beds for the very sick patients. They began eyeing the desk jobs. They wanted to answer the phone and type the admission forms. Finally they took over the responsibility of running errands to other parts of the hospital. The "revolution" reached the point where the nurses were able to have each new admission oriented to the ward by a welcoming group of older patients.

The ward acquired a new culture. As the weeks went on, the activists took over the ward, and it was quite common to see a patient get up in the morning with an I.V. drip going into one arm, make his bed with the other, then carry trays of food to the bedridden, and explain the new system to the practical nurses that were occasionally asigned to the ward.

As the experience continued, some of the patients who had had remissions and had gone home began coming back when their illness progressed. A common reaction was a sense of relief at returning to a culture that treated them as though something was still expected of them. Some patients had visibly regressed at home, but under the competitive spirit of the ward they, too, returned to greater activity. Their demands for nursing attention diminished, and they appeared happier.

Ward Culture

The self-care atmosphere periodically broke down in the face of actual death and the overwhelming illness of patients, and the nurses learned that in order to maintain this culture they had to nourish and support it. A change in the patient population had to be countered with renewed nursing effort to teach the new admission about the ward culture. If the old-time patients of the ward outnumbered the new ones, the culture was protected. Otherwise the authority of the nurses had to be brought into play to back self-care until the new patients could be acculturated.

In a summary session which was taped, the staff reviewed the history of the experiment after 18 months. The unanimous conclusion was that the changes in the ward were of major importance to the patients. The nurses spoke of the increased will to live that they had noted. They pointed out that patient care was more efficient. And most of all, from an administrative point of view, they realized that the turnover rate of nurses, which had been very high, had decreased markedly. Now nurses wanted to work on the unit.

What are the psychological implications of this experience? Certainly the work of some of the investigators reported in the Annals of the New York Academy of Sciences entitled "Psychophysiological Aspects of Cancer", published in 1966[1-5], shows some correlation between the onset of cancer and the experience of an emotional loss. The implication that such a connection exists in the onset of illness suggests that its remission, or at least its management, may be equally influenced by emotional factors of a positive nature. The effect of a positive ward culture must therefore be considered worthy of research.

Aside from considering the course of the illness, we can think about the quality of life that the patient lives. Palliation need not only be thought of in terms of physical pain; it can also be seen as a legitimate goal to achieve on an emotional level. The response of the patients to the idea that they were expected to function on an adult level decreased their anxiety, their dependency, and their feelings of being a burden, and thereby added to their well-being. The quality of their remaining life was improved.

One of the reactions we frequently see in sick patients is that of shrinking horizons over a period of time. The patient loses interest in the world outside the hospital, then in the life affairs of friends and family, and finally in the ward. At the end, he becomes focused on his own life functions. Maintaining his interest as long as possible in the surrounding world and making him feel responsible for it retard this process and keep him feeling fulfilled for a longer time.

Conclusion

This clinical report suggests an approach quite different from that implied by Kurt Eissler in his famous book, *The Psychiatrist and the Dying Patient.*[6] Eissler encouraged the patient's defense mechanism of denial by allowing the patient to imbue his therapist with magical qualities. The therapist enhanced this image by showing concern, bringing gifts, and behaving in a protective way toward the patient. The method implied was "I will take care of you." In contrast, the experience of our cancer unit leads us to feel that we could successfully support a patient's denial by using an anti-regressive approach. It might be valuable to test these different approaches in a research project. We certainly do not have the complete answer yet. Our experience indicated that many of our patients did well clinically in the atmosphere we had created. However, I am not convinced that this approach works well during the period just before death. This period is still an unknown entity from a psychological point of view.

"Make or Break" Points

There were two main "make-or-break" points in our pilot project, when things could have gone very differently from the way they did. The first such point took place at the initial meeting with the nurses. By focusing the goals of this meeting on patient management rather than anything more radical, I made the road easier for myself. The nurses were able to get to know me without feeling threatened. I could then suggest more significant changes, knowing that I had a comfortable relationship with the staff.

The second "make-or-break" point occurred when the nurses decided that they were ready to take a chance and run the ward differently. Without making a major issue of it, I spoke to the medical staff individually and encouraged them to show interest in and appreciation for the project. I pointed out that the more responsible the nurses were made to feel in their involvement with the ward, the less they would burden the medical staff with minor problems. As it turned out, the medical staff became fascinated with the project and invited us to report on it at one of their scientific research conferences.

In any attempt to change a ward culture, as we did, a good deal of groundwork with key people on an informal level becomes necessary. We prepared the medical staff and made sure to discuss all changes with the head nurse, the nursing supervisor, the dietitian and the hospital administration.

Finally, I'd like to offer one more significant observation, ie, the importance of sharing. We all realized that our ability to talk about death and cancer with the patients and to

Continued on page 123

THE NEED FOR FUNCTIONAL REHABILITATION IN MULTIPLE SCLEROSIS*

• The injection of methylprednisolone intrathecally relaxes muscle spasticity which facilitates rehabilitation techniques. The training program for multiple sclerosis presented by the author produces remissions and reduces the frequency of exacerbations.

George J. Boines, M.D.

The disease multiple sclerosis (MS), which is notorious for its uncertainty and incurability, is a challenge to the medical profession and the members of the National Rehabilitation Association.

The severe disabilities and deterioration of multiple sclerosis patients have sometimes been increased by a negative approach to the patient's problems by the medical, paramedical and rehabilitation personnel. This lack of a comprehensive approach has been perpetuated by the belief that "spontaneous remissions" may occur at some unpredictable future period. However, we have noted that after neurologic changes have been established, a "spontaneous remission" never occurs. These disabilities, which occur from spinal cord pathology, include paresthesias, muscle spasticity, contractures, poor vision, malfunction of muscles of speech, neurogenic bladder with infections, bowel problems and emotional depression. Advising "rest" and limited activity further multiplies the disabilities because of lack of use and misuse of muscles and joints.

Proper medical management consists of prevention and correction of muscle-joint disabilities in any state of the disease and of active medical and physical functional rehabilitation. Evaluation of the patient involves every phase of a total and complete medical survey. This includes consultations as indicated by the neurosurgeon, cardiologist, ophthalmologist, physiatrist, audiologist, therapists for physical, occupational and speech defects, psychologist, and psychiatrist. The nutritional status, medical and drug therapy and histories are studied carefully.

Appropriate individualized treatment of MS patients can increase their functional independence, improve coordination and relearning of independent skills in self care, improve communication and train them in activities of daily living. Vocational training and work placement by the rehabilitation agencies can, by creating financial independence, restore dignity and elevate the patient's self image.

The disabling factor in MS is edema and injury to the myelin in the central nervous system, particularly the spinal cord. The demyelination is thought by some to be produced by "protein antigen" which has been isolated by Bornstein[1] and others. This allergic type of edema irritates and compresses the nerve fibers resulting in spasticity, loss of control, and paresthesias. There is no clear-cut evidence that MS is caused by a living virus. In our own first group of 450 patients, 86% were married when the disease began, a fact which further emphasizes the importance of physical and emotional stress in the etiology of MS.

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*This paper in a slightly different form was read before the Annual National Rehabilitation Association Conference, New, York, New York, November 4, 1969.

The first symptoms in the initial attack in 55% of these patients were minimal and disappeared or improved for a variable length of time. After secondary neurologic changes developed, none had any other lasting remissions in spite of extensive treatments including ACTH, B_{12} injections, oral cortisone and other therapies. The remaining 45% did not have any remission at any time during the course of their disease. (Table 1)

TABLE I

LENGTH OF REMISSION AFTER INITIAL SYMPTOMS IN FIRST 450 PATIENTS

Years of Remission	No. of Patients	Per Cent
0	203	45 1/3
1-2	96	21 1/3
3-5	54	12
6-7	33	7 1/3
8-31	64	14
	450	100%

Steroids are the best drugs for reducing edema and suppressing allergic reactions. Methylprednisolone acetate suspension (Depo-Medrol, Upjohn) is the only drug which can be injected in the subarachnoid space. Its injection intrathecally has been used for over fifteen years in Europe and the United States in treating various neurologic disorders with excellent results.[2]

We must keep in mind, however, that methylprednisolone does not cure multiple sclerosis, but it relaxes the spasticity[3] and suppresses the causative allergic factor, thus enabling the prevention and correction of various disabilities through the application of a therapeutic program. The total program[4] includes a low saturated fat and antiallergic diet, vitamins, anabolic drugs and specific routine exercises. Smoking and consumption of alcoholic beverages are prohibited because they act as toxic irritants to the central nervous system. This overall management frequently encourages remission and corrects many of the defects in body mechanics and musculo-skeletal abnormalities.

I would like to suggest that the National Rehabilitation Association study our own rehabilitation program with the idea of establishing six similar regional centers in our 50 states, possibly in conjunction with the Heart Disease, Cancer and Stroke Program. These Rehabilitation Centers could manage the treatment of multiple sclerosis patients in their areas. The program would be a team effort headed by a general practitioner or an internist well-informed in medical and neurologic diagnostic procedures and capable of coordinating the various indicated specialty services since an accurate diagnosis must be made before a treatment program can be initiated.

Rehabilitation agencies in most states, in my experience, do not consider the MS patient. Many are rejected by diagnosis alone or because there are no specific centers where they can be treated effectively. The fact that there is no cure for multiple sclerosis is no reason for not accepting these patients for medical rehabilitation and work placement. For example, we have in this country well-equipped centers for heart disease, cancer and stroke, arthritis, leukemia, and mental retardation, to mention a few, and yet so far as prolongation of life, rehabilitation and employability are concerned, less can be accomplished with those patients than with the patient with MS.

Emphasis on the crippling effects of MS during annual campaigns for funds certainly increases public fear of MS. The exhibition of patients in wheel chairs or walking aided by crutches gives the impression that all MS patients become crippled. Young adults are singled out as being the ones usually affected and crippled by this disease, but Table II

TABLE II

AGE AT ONSET OF MULTIPLE SCLEROSIS

Age	No.	Per Cent
10-20	44	9.8
21-30	177	39.2
31-40	157	35
41-60	72	16
Totals	450	100.0%

indicates of our 450 patients, 16% were first affected after the age of 40.

Our statistics also show that multiple sclerosis patients have a high rate of improvement over a number of years, especially if proper treatment is given in the early stages of the disease.

Summary

Multiple sclerosis is one of the most prevalent of the chronic neuromuscular diseases, yet it has been neglected and overlooked by the medical profession as well as by vocational rehabilitation agencies. My opinions are based on my own experience in treating over 500 patients since 1958 and examining another 200 who came to be evaluated but were either not MS at all or were too far advanced for functional rehabilitation. Most of the Multiple Sclerosis Societies and many physicians emphasize that the disease is incurable and there is no specific therapy or help to offer. Repeatedly the patient is told that he must learn to live with the disease and get plenty of rest. He is often told if he waits long enough he may get a "spontaneous remission" and get well and is thus discouraged from seeking help. Our records indicate that these statements are fallacious.

Over 75% of our patients treated have been rehabilitated. This has been accomplished by a complete systemic review of the patient, a course of treatment which includes physical therapy, allergy-free diet, intrathecal injections of methylprednisolone and a team effort by a group of physicians including an ophthalmologist, urologist, neurosurgeon, physical therapists, dietitians and other specialists as required.

The National Rehabilitation Association should aim to set up medical centers to treat multiple sclerosis effectively.

I feel confident that such rehabilitation groups would encompass personal interest, the compassion, love, patience, and skill required in the total management of the MS patient.

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CANCER, EMOTIONS, AND NURSES

Continued from page 120

bear their needs without closing ourselves off from them grew in direct proportion to our ability to share our own anxieties at our group meeting. The more we talked together, the more easily we could listen to our patients. As a side note, I was able to serve as a sounding board for the patients and the nurses because I was able to unburden myself at psychiatric consultation service rounds. It seems that if the system works, it does so on all levels.

The implications of this project apply to the hospital as a whole. From a financial point of view the program offers the possibility of reducing costs in that patients may need fewer aides. From a personnel point of view it suggests greater stability of staff by decreasing turn-over rate. And from a humane point of view it offers dignity.

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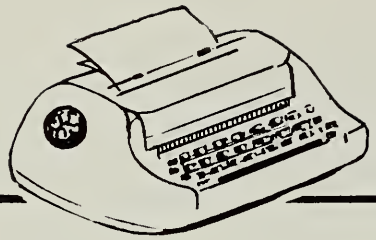

Special Reports

MAN'S ENVIRONMENT: How It Affects His Health Behavior

On November 10, 1969, Dr. Barry Commoner, Director of the Center for the Biology of Natural Systems at Washington University, St. Louis, Missouri, spoke on *Man's Environment: How It Affects His Health Behavior* at the joint session of the School Health Association and the American Public Health Association. He warned those responsible for the health of young people that these are the first generation to carry strontium 90 in their bones, DDT in their fat, and asbestos in their lungs, for they are the involuntary subjects of a huge world-wide experiment which will test the ability of human beings to survive.

Dr. Commoner pointed to an important feature of modern pollution. In each case the new hazard to human health is a direct outgrowth of a beneficial form of technology. For instance, intensive nitrogen fertilization to increase food production has added vast quantities of nitrates (and even poisonous nitrites) to our water supplies. Control of insects by DDT has "saved the elms but killed the robins." Insulated buildings and quieter air conditioning systems have caused a new and intractable lung disease from asbestos. Gasoline engines, nuclear reactors, photochemical smog, SO_2, etc., from our technological achievements have altered the chemical composition of the air we breathe and may even be changing the temperature of the earth. Most of these agents are new to human experience. They made their intrusion into the environment rather suddenly between 1945-50, and the generation born into this situation is just now reaching adulthood. The long-term medical results are difficult to predict with any degree of confidence.

In sum, Dr. Commoner believes that "We have come to a turning point in the human habitation of the earth. Never before in the history of this planet has the thin life-supporting surface been subject to such diverse, novel, and potent agents. The cumulative effects of these pollutants, their interaction and amplification can be fatal to the complex fabric of the biosphere. Continued pollution of the earth, if unchecked, will eventually destroy its fitness as a place for human life." Solutions can't be expected to come from scientists and producers alone. The problems involve political, economic and philosophical decisions. At present, we have a confused state of public policy; we must get new and dynamic approaches to ecological study and health education, and soon.

There is increasing evidence that college students are becoming deeply concerned with environmental problems, and there is hope that the young generation will somehow find the strength and wisdom to solve them. For they are the ones who must restore the environment to the service of human welfare, they must find some way to repay the vast biological and social debts which we are accumulating. We who are concerned with environmental health and health education are stuck now with the challenge to teach the skills and insights which students so desperately need.

I was asked, as a representative of the PTA, to react to Dr. Commoner's speech. The home is the first place to establish attitudes toward the environment — to understand conservation. Parents and teachers can help their children develop public awareness at an early age by exploring nature, by reading periodicals with them, by writing letters to editors, politicians, community leaders, and by talking with farmers, industrialists, township officials, health workers. Many interesting, informative persons and programs are available, and are appropriate for inquiring and concerned citizens.

From the point of view of school involvement, I feel that health education should be a subject of prime concern, and not be delegated to second-class status. It needs good teachers who believe in their subject and who can inoculate health classes with enthusiasm. They must start in the earliest grades with appreciation of resources, curiosity about the environment, and a sense of personal and community responsibility. They should get Dr. Commoner's message into simple terms with familiar examples, then reach out as far as they can with a sense of importance and urgency. High schools should be able to offer real courses in ecology. And schools should not be afraid to call upon local experts in their given fields, to invite them to classes, to throw controversial questions at them and to get involved in "hot issues" of the day.

In discussing "the community," I felt lucky. Delaware has many good examples to cite: 1) The Governor has a new cabinet post, the Department of Natural Resources and Environmental Control; 2) The Water and Air Resources Commission has recently held spirited open hearings throughout the state; 3) Our radiation safety authority is active and representative, having members from the Board of Health, University of Delaware, Wilmington Medical Center, industries, politics, and the Water and Air Resources Commission; 4) We have indicated a willingness to fight for legislation to enforce high standards, and to pay for expensive improvements; 5) We have our Bombay Hook and Delaware Wild Lands; 6) We have private citizens who work for such organizations as the Nature Education Center, the Brandywine Valley Association, and the Red Clay Creek Association. The latter two have worked miracles to improve the health of their respective waterways and have in addition provided educational programs. They send speakers and slides into classrooms, conduct annual conservation workshops for about 40 teachers, and have even published a marvelous book for elementary schools which starts at the child's "back door" (the Red Clay Creek) and reaches out into the wide, wide world in a dozen different ways.

Delaware still has no specific requirements at all for health education in elementary schools. Our present regulation, written in 1948, calls for 72 hours of health instruction in junior high, and 72 hours in senior high school, but doesn't say when, how, or by whom it shall be taught. The only aspect that must be taught is hazards of tobacco, alcohol and narcotics. All else in the health education field is "hit or miss." In some districts it is good; in some it is bad; in some it is absent. No elementary school teacher needs to have studied any professional health education courses. One Health Education course at the University of Delaware has been open only to full-time students of the School of Nursing. On the other hand, school nurses may not teach health classes unless they are also certified as teachers.

Many school health classes are taught by those for whom it is a minor concern. We have only a handful of professional health educators. No one person has statewide full-time responsibility for coordinating health education in the schools. It took about 15 years to get a supervisor of school nurses for Delaware. We must also work to get a director of health education for our Delaware schools.

Jane Frelick, M.N.

Mrs. Frelick is the Health Chairman of the Delaware State PTA.

"The duty of science is not to attack the objects of belief, but to stake out the limits of the knowable and to center consciousness within them."

Virchow

Highlights

• We invite members of our Society to send in abstracts of their recent publications or presentations at recent meetings so that they may be published in the Journal and thus shared with their colleagues.

FLUID AND ELECTROLYTE THERAPY IN SURGICAL PATIENTS

Lewis A. Barness, M.D., *Professor of Pediatrics, School of Medicine, Division of Graduate Medicine, University of Pennsylvania — Fall Course, Delaware Academy of General Practice, October,* 1969.

Most children with surgical problems, particularly those requiring elective surgery, require only maintenance fluids. Understanding of the volume of fluid necessary to preserve status quo can frequently eliminate serious complications of parenteral fluids. Fluid requirements for the normal child are usually considerably larger than for the bedridden preoperative or postoperative surgical patient. Those daily requirements associated with exercise, sweating, and growth are minimal during the short stay, and any excess or deficit during the state of health is usually quickly corrected by thirst or the kidneys.

The volume of fluid for the usual patient is that made up of daily body requirements.

Sodium maintenance requirement is approximately 1-3 mEq/lb/day, and potassium 1-2 mEq/lb/day.

In general, if any question exists regarding the total volume of fluid to be given in a 24-hour period, it is safer to err on giving too little rather than too much fluid.

Fluids and electrolytes as listed are those for 24 hours, and may be given at a rate calculated by dividing the total fluid into hourly requirements. In some conditions, such as those listed below, these requirements may be increased or decreased. Except for those children in a state of shock, fluid should similarly be divided over the 24 hours.

Most of the pitfalls encountered in fluid therapy are related to overhydration, too rapid hydration, or the administration of the wrong type of fluid for the deficit losses of the patient. Too much or too rapid fluid administration is especially likely to give difficulty in

Table I

Fluid Loss Per Lb. of Body Weight Via	Infant's Weight				
	Newborn	<15 lbs.	15-25	25-40	40 lbs.
Urine	18 cc	25 cc	18 cc	15 cc	10 cc
Skin Lungs	14 cc	20 cc	14 cc	12 cc	8 cc
Stool	3 cc	5 cc	3 cc	3 cc	2 cc
Total	35 cc	50 cc	35 cc	30 cc	20 cc

patients with:

Disease	Complications of Fluid Therapy
Heart disease	Heart failure, pulmonary edema
Liver disease	Heart failure, pulmonary edema, peripheral edema
Lung disease	Pulmonary edema
Kidney disease	Heart failure, edema, anuria
Brain disease	Cerebral edema, heart failure
Previous hypertonic dehydration	Cerebral edema, convulsions

Hydration with electrolyte-free solutions, even in proper volume and rate, may result in water intoxication with seizures, anuria, heart failure, and shock. This may occur in anyone, but is especially likely in infants and small children, and in patients with pyloric stenosis, intracranial lesions, prolonged vomiting or diarrhea, or diabetes.

Persistent underhydration results in thirst, fever, oliguria, delay in recovery and general malaise.

Dehydration is particularly likely to occur in patients with shock, or burns, after cardiac catheterization and after intravenous pyelogram from hyperosmolar loading. The best treatment, of course, is avoiding the cause. Patients receiving parenteral fluids should be monitored by frequent observation, especially of urinary output, blood pressure, weight, pulse and respiratory rate, temperature and, in the acute phase of treatment for more severe illnesses, central venous pressure.

Attention to details such as these has over the past few years markedly reduced morbidity and mortality of surgical procedures on infants and children.

* * *

PERSONAL CREED

"Act only on that maxim whereby thou canst at the same time will that it should become the universal law."

Immanuel Kant

CHEMOTHERAPY FOR MALIGNANT DISEASE: The Alkylating Agents

Sheldon A. Lisker, M.D., *Associate in Medicine, School of Medicine, Division of Graduate Medicine, University of Pennsylvania — Fall Course, Delaware Academy of General Practice, October, 1969.*

The administration of chemotherapy to patients with malignant neoplastic disease carries with it the implication that, with a very few notable exceptions, the patient's disease is no longer amenable to cure. Except in 75% of cases of choriocarcinoma in the female in whom treatment is instituted early in the disease, in selected cases of Wilm's tumor in childhood, and the Burkitt lymphoma, and possibly in a very few selected cases of acute lymphocytic leukemia in childhood where "cure" has thought to have been obtained by chemotherapy alone, the use of these chemicals carries with it the implication that the primary modalities of therapy in the treatment of neoplastic disease have failed, and efforts to help the patient have been reduced to an attempt to obtain subjective and/or objective benefit for the patient, and possibly to prolong his survival.

Before proceeding to a discussion of the individual drugs, a set of principles which should guide the physician in their use when these drugs are administered on an outpatient basis will be briefly delineated. 1) The vast majority of drugs in use today are protoplasmic poisons. Any physician using these agents must be thoroughly familiar with the spectrum of their activity against neoplastic disease, and equally familiar with their toxicity. When toxic effects are to be anticipated, such as alopecia which develops in a large percentage of patients given cyclophosphamide, the patient should be warned in advance. 2) Since the vast majority of these agents are bone marrow depressants, it is usually necessary to follow patients receiving chemotherapy at fairly frequent intervals, and to obtain blood counts and platelet counts before additional medication may be safely given. Although this results both in inconvenience and increased expense to the patient, and necessitates accessibility of reliable laboratory facilities, it is absolutely mandatory that this precondition be met. 3) Many chemotherapeutic agents such as 6-mercaptopurine, cyclophosphamide, and methotrexate, are immunosuppressive drugs which alter the patient's response to exogenous infection. Patients being treated with such agents may require vigorous antibiotic therapy should intercurrent infection supervene. Some of these infections may involve unusual organisms such as fungi, cytomegalic inclusion virus, and Pneumocystis carinii. Any physician treating such patients should have access to adequate hospital diagnostic and treatment facilities. 4) With the administration of oral chemotherapy in which bone marrow suppression may occur, it is essential to give the patient a limited supply of medication which will last only until the time of his next office visit and blood count. This is helpful in preventing marrow and other forms of toxicity should the patient fail to return for follow-up. Aplastic anemia has not infrequently resulted from the uncontrolled use of chemotherapeutic agents.

Chemotherapeutic agents may, for purposes of discussion, be divided into five groups: 1) alkylating agents, 2) anti-metabolites, 3) antifolic acid drugs, 4) hormonal agents, and 5) miscellaneous group of drugs. I shall discuss the alkylating agents and the miscellaneous group which are currently available for clinical use.

The alkylating agents of which nitrogen mustard is the prototype, include six drugs in common use at the present time. These are nitrogen mustard, cyclophosphamide, chlorambucil, Thio Tepa,* melphalan, and busulfan. A seventh drug, Triethylene Melamine** which was once used in the therapy of chronic lymphocytic leukemia, has largely been abandoned because of toxicity. Nitrogen mustard will be omitted from the current discussion because it is usually administered in a hospital setting.

Cyclophosphamide (Cytoxan—Mead Johnson) is an agent that has been proven to be useful in numerous malignant illnesses. It is of major value in the treatment of systemic lymphoma, neuroblastoma, Wilm's tumor, acute lymphocytic leukemia, plasma cell myeloma, and a variety of sarcomas and carcinomas, including some cases of carcinoma of the ovary, and a small minority of lung carcinomas. The drug may be administered intravenously. We give a loading dose of 3 mg/kg/-day intravenously for five days. Subsequent to this, unless toxicity supervenes, the patient is placed on an oral maintenance dose which may vary from 50 to 200 mg/day depending on the white count. In some situations, as with the Burkitt lymphoma and carcinoma of the ovary, large doses of cyclophosphamide of the order of 40 to 60 mg/kg have been given as a single intravenous injection and repeated at intervals of four to six weeks. Toxicity from this drug takes the form of bone marrow depression, gastrointestinal toxicity which may include anorexia, nausea, or vomiting, alopecia in a significant percentage of cases, and hemorrhagic cystitis in a very small percentage of cases. Of all of the alkylating agents currently available, cyclophosphamide is perhaps the most useful and most versatile of these agents.

Chlorambucil (Leukeran — Burroughs Wellcome & Co.) is the drug of choice in chronic lymphocytic leukemia. It is also of value in lymphomatous states, carcinoma of the ovary, and in polycythemia vera. The drug is administered by mouth in a dose of 0.1 to 0.2 mg/kg/day. It is unwise to exceed 450 mg total dose in a single course. Toxicity takes the form of bone marrow depression, and in a few cases gastrointestinal intolerance is observed. A few cases of erythema multiforme have been seen with this drug, but this is uncommon.

Triethylene thiophosphoramide (Thio Tepa-Lederle) is a drug that is of some value in lymphoma, malignant melanoma, breast carcinoma, and occasional cases of chronic lymphocytic leukemia. It is usually given parenterally (either intramuscularly or intravenously) in a dose of 0.2 mg/kg/day for five days. The same dose is then continued at weekly intervals until benefit is exhausted or toxicity supervenes. As with many of the other alkylating agents, side-effects take the form of bone

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*Triethylene Thiophosphoramide — Lederle
**Lederle

marrow depression and gastrointestinal intolerance. Triethylene thiophosphoramide is also of some value in the treatment of malignant effusions, in particular those related to underlying lymphoma or breast carcinoma. Thirty to 60 mg of the drug may be given intrapleurally or intraperitoneally.

Melphalan (Alkeran-Burroughs Wellcome & Co., L-Sarcolysin) is presently the drug of choice in plasma cell myeloma; benefit may be obtained in perhaps 25 to 33% of cases. It is of some value in the treatment of metastatic malignant melanoma.

Melphalan is generally given by mouth in a dose of 0.1 mg/kg/day for 7 days followed by a maintenance dose of 2 to 4 mg/day. Another way of utilizing the drug has been to administer it orally in the form of so-called "burst therapy." This involves the use of approximately 0.25 mg/kg/day orally for four days with repeated similar courses at intervals of four to six weeks depending upon benefit and toxicity. The end point of drug administration is usually the production of leukopenia. Toxicity takes the form of bone marrow depression and occasional gastrointestinal intolerance. As with other members of this group of drugs such as nitrogen mustard, chlorambucil, and Cytoxan,* a latent period is usually observed after the initiation of therapy, as well as a continuation of drug effect for a period of days or even weeks after the administration of the agent has been terminated depending upon the drug in question and the amount given.

Busulfan (Myleran-Burroughs Wellcome & Co.) is currently the drug of choice in chronic granulocytic leukemia. It is also of value in the treatment of patients with polycythemia vera, myelosclerosis with myeloid metaplasia, and essential thrombocythemia. The drug is given by mouth initially in a dose of 4 to 8 mg/day. One usually treats until the white count is in the range of 15 — 20,000 /cu mm and then discontinues medication. A number of patients with chronic granulocytic leukemia will require a maintenance of the drug usually in the range of 1 to 2 mg a day. Other patients may be treated with the administration of repeated courses of this medication without maintenance therapy depending upon the speed with which the white count rises again following treatment. Toxicity to busulfan usually takes the form of bone marrow depression. With the long continued use of the drug, some unusual side-effects such as pulmonary fibrosis, darkening of the skin, and a syndrome resembling adrenal insufficiency may occur.

The miscellaneous group of agents includes the Vinca alkaloids derived from the periwinkle plant (vincristine, vinblastine), procarbazine (Matulane), Actinomycin-D (Cosmegen), ortho p'-DDD and quinacrine (atabrine). Ortho p'-DDD is useful primarily in treatment of a rare neoplasm, adrenal carcinoma, and will not be discussed today. Quinacrine is really not an anti-neoplastic agent at all, but, as is well known, was originally developed as an anti-malarial drug and is currently useful in the management of malignant pleural effusion. It acts primarily by producing an obliterative pleuritis when given in a dose of 100 to 200 mg intrapleurally over a period of three to five days, and is effective in approximately 2/3 of cases in which it is used.

Vincristine (Oncovin-Lilly) is one of the primary drugs in the induction therapy of acute lymphocytic leukemia. It is also of value in lymphomatous disease, Wilm's tumor, neuroblastoma, trophoblastic tumors of the female, and in carcinoma of the male testes. It may be used singly or as a part of a combination chemotherapy program. It is usually administered intravenously through the tubing of a running I.V. The dose of the drug in children is usually of the order of 2 mg/m^2 intravenously at weekly intervals for three or four weeks in the initial therapy of acute lymphocytic leukemia. In other neoplastic states, the dose of the drug varies between 0.015 to 0.05 mg/kg intravenously at weekly intervals. Vincristine is one of the few drugs whose toxicity is not primarily to the bone marrow. The major problem with this agent is neurotoxicity which may take the form of areflexia, muscular weakness, peripheral neuritis, paralytic ileus, and cranial nerve palsies. Minimal bone marrow depression in the form of leukopenia or thrombocytopenia may occur as may alopecia and stomatitis.

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*Cyclophosphamide – Mead Johnson

Vinblastine (Velban-Lilly), a congener of vincristine derived from the periwinkle plant, differs very slightly in structure from the latter drug, but its spectrum of activity and toxicity are completely different from that of vincristine. Vinblastine is active primarily in Hodgkin's disease. It is given intravenously in a dose of 0.1 to 0.2 mg/kg/week. Toxicity takes the form of bone marrow depression, and gastrointestinal side-effects. Neurotoxicity with this agent is unusual.

Procarbazine (Matulane-Roche) is a secondary drug that is used primarily in the therapy of disseminated Hodgkin's disease which has become refractory to the alkylating agents and vinblastine. It is given orally in a dose of 50-300 mg/day until leukopenia or thrombocytopenia occurs. Remissions, when they occur, tend to be shortlived and rarely exceed three months. Toxicity takes the form of bone marrow depression, mental depression, hepatic damage, and gastrointestinal side-effects.

The final agent for consideration is actinomycin-D (Cosmegen-Merck Sharp & Dohme). This drug is derived from an antibiotic, and is primarily useful in the management of Wilm's tumor, trophoblastic tumors in females, carcinoma of the male testes, carcinoid syndrome, and in a miscellaneous group of carcinomas and sarcomas. It is usually administered intravenously in a dose of 10-15 gamma/kg/day over a period of five days. Repeat courses of this magnitude may be given at intervals of four to six weeks, or weekly maintenance of 50 gamma/kg may be utilized. Toxicity takes the form of bone marrow depression, gastrointestinal disturbance, stomatitis and alopecia.

Summary

The use of these chemotherapeutic agents in the variety of disease states which we have mentioned usually implies that the neoplasm has spread to the point where cure is no longer possible, and that the best that can be hoped for is palliation. However, when these protoplasmic poisons are used judiciously, they offer in a significant number of cases subjective and objective benefit to the patients to whom they are administered, and in some cases may result in prolongation of useful life. However, any physician using these agents, which usually have a narrow therapeutic index, must be thoroughly familiar with the indications for their use and their side-effects. This involves the return of the patient at frequent intervals for careful follow-up examination, the availability of adequate laboratory facilities, and the availability of an adequate diagnostic and therapeutic inpatient hospital unit. Any physician who cannot meet these criteria should not treat patients with any of these chemicals.

Letters to the Editor

To the Editor:

I have read with interest Dr. Glassman's letter to the editor (Delaware Medical Journal, November 1969) regarding the old saying that "the exception proves the rule." I also have heard that this is misquoted, and that truly the saying goes "the exception *probes* the rule." If true, this would substantiate his argument that the word *proves* as used in the quotation means *tests*.

MARJORIE J. MCKUSICK, M.D.

To the Editor:

This wry and laughing-to-keep-from-crying piece of poesy was sent to me by one of my patients who is trying to be "brave" about what seems to him a very raw deal from organized medicine. Since we physicians are all being cautioned to listen to the consumer, I thought the readers of the Journal might be interested and perhaps amused by it.

CHARLES S. RIEGEL, M.D.

AN INDIAN TALE

Me poor Indian brave who work for white man.
He give me plank to stand on, 12 feet high, to work.
Plank break, plank not scaffold plank, not good.
Indian fall, get hurt, break bone in leg.
Leg hurt, very bad.
White man pay big money for work.
Some my pay go for thing white man call Social Security.
Indian get hurt on job, before retirement age, white man say,
Indian get thing called disability benefits, from Social Security.
Indian think good!
Now Indian apply for thing called disability benefits.
Indian told, wait!
Indian wait four moons.
Indian do what white man say, go to white medicine man.
Indian tell white medicine man not to hurt leg like three other white medicine men do before.
White medicine man get angry because Indian ask him not hurt leg.
White medicine man refuse to examine hurt leg.
Indian wait one moon.
Indian man get letter from pow-wow council, from Social Security office, say Indian no get disability benefits.
Say something under law . . . but not say what law.
Pow-wow council say Indian not hurt.
Indian hurt, Indian cannot work, Indian need nobody tell him leg still hurt bad.
How can white medicine man tell if leg hurt?
Pow-wow council say Indian give them statements.
Indian give no statements, only time and place Indian go see white medicine man.
Indian know three white medicine men on payroll of thing called insurance company.
Three white medicine men, talk with forked tongue.
They tell brave, to face, leg hurt.
To thing called insurance company they say leg no hurt.
Pow-wow council from Social Security believe three white medicine men.
One good white medicine man, see hurt. Him tell brave, very bad condition. Thing called inflammation of blood vessels in hurt leg.
Brave afraid!
Good white medicine man say only thing help, thing called operation.
Indian ask thing called insurance company to send good white medicine man all reports from all other forked-tongued medicine men.
Insurance company, no send.
Good medicine man can do nothing to advise without reports, to make judgments, to make leg better.
Indian walk with limp; leg hurt even while brave sit here and write.
Two white medicine men say use leg, like leg not hurt.
Indian try, only more hurt come.
Indian tell white medicine men, leg hurt when use normally but him say, use!
Good white medicine man see hurt, him say stay off, no use; what forked-tongued medicine man say, wrong!
Good white medicine man tell Indian condition of leg take long long time to get better.
Good white medicine man say another operation only thing will help, and thing called guarantee may not be possible.
Indian tell good medicine man, he want operation to correct leg.
Indian cannot hold leg straight, like arrow, leg crooked now.
Indian no work for 32 moons.
Indian cannot hunt, give away four bird dogs.
Indian dig garden to help keep squaw.
Squaw have thing called sugar diabetes, very bad.
Struggle for Indian to dig garden, but Indian dig.
Big help from garden now. Help stretch thing called handout from insurance company, 50 dollars a week.
Indian talk to union president, find out wages $5.60 an hour now when Indian no can work.
Indian feel like he can cry. Indian get only 50 dollars a week.
In one day, eight hours, Indian could earn $44.80, if Indian leg could only feel good enough so Indian could work.
Indian not look for thing called sympathy.
Indian cannot spend sympathy.
Indian know leg hurt for 32 moons now, and Indian cannot work.
How pow-wow council, from Social Security, sit so far away and tell brave leg no hurt?
Indian beg for 28 moons to six white medicine men, to help make leg better.
Only one medicine man see hurt, one other, say thing called 40 per cent disability; how him know?
Indian know, good white medicine man say Indian have many blood clots, in leg. Indian afraid!
Maybe pow-wow council from Social Security office think if give Indian disability benefits which are retroactive, might be too big a sum to give to poor dumb Indian all at one time.
Indian know they have to pay, but they make Indian beg for it.
Indian see white man, called attorney in February 1967.
This attorney, for 32 moons has spoken with a forked tongue.
He truly did not represent Indian.
Indian talk to great white man, called judge --------.
Judge ----- read thing Indian write called document.
Him say, good care.
Indian got new attorney, hope, maybe things get better.

EARLY DELAWARE PHYSICIANS

II — TYMAN STIDHAM, Delaware Physician during the English-Colonial Period 1664-1776.

Dr. Tyman Stidham, first physician to settle permanently in Delaware, was a Swede who survived shipwreck and capture by pirates to become a wealthy landowner. He was born in Hammell, north of Sundsville, Sweden, in the early years of the 17th Century. After a liberal education in Sweden he became a barber-surgeon who won a high reputation. Stidham was not the first of his profession here. Hans Janeke arrived aboard the *Kalmar Nyckel* in 1638 with $10 worth of medicine, but Janeke did not stay in the New World.

Stidham arrived aboard the *Fama* on the fifth Swedish expedition on February 15, 1643. It had been a rough voyage which became worse as the ship neared its goal. When the *Fama* entered Delaware Bay she encountered a storm that brought down her mainmast and drove her aground. He found plenty to do treating the sick and wounded at Fort Christina, then became homesick and returned to Sweden in 1645 with most of his salary still due him. In 1649, however, he decided to return to New Sweden and to bring his wife and children with him. They embarked aboard the *Katt*, and again he ran into trouble at sea. The *Katt* was forced by a storm into Spanish waters and went aground. Pirates looted the ship and took Stidham and his family prisoners. After two years of captivity Stidham was finally able to get to Amsterdam with his wife and children, and from that city they were able to book passage for New Sweden.

This time he was the ship's surgeon aboard the *Eagle*, which arrived off Fort Casimir in May 1654. Stidham and his family went on to Fort Christina, where he found the settlement badly depleted with many ill. There was also trouble with the Indians, who had been receiving firearms from an unknown source. George Lamberton, an English trader, was suspected, so the Swedish officials asked Stidham to investigate. The next time Lamberton's ship arrived off Fort Christina, Stidham went aboard disguised as a trader and won Lamberton's confidence. He soon discovered that Lamberton had been selling arms and powder to the Indians, but Stidham was not able to substantiate a report that Lamberton had tried to bribe them to massacre the Swedes. After Lamberton's arrest, Stidham testified at his trial. When the Dutch took over, Stidham remained in the colony and took the oath of allegiance. He, of course, lost his official post of surgeon and his salary of 15 riksdalers a month. William Beekman, vice-director of the Dutch West India Company, recommended his appointment after Jacob deCommer, the Dutch surgeon, was discharged, but the appointment was blocked by Alexander d'Hinoyossa, the director.

Stidham had a large private practice which extended as far north as Upland, Pennsylvania, but the pay was not good, so he became a trader on the side and started acquiring land. He learned the Indian language and won the confidence of the chiefs. When the British conquered the Dutch, Stidham pledged allegiance to the new government, which soon recognized his right to the land he had acquired earlier. This property included 346 acres of what is now Wilmington. It roughly consisted of the land north of what is now 10th Street and south of the Brandywine, east of Rattlesnake Run and west of the present Pennsylvania Railroad. Stidham was married twice and had eight children and many descendants who have been prominent in Delaware history. His later years were quiet ones, and he died in 1686.

Adapted from *Forgotten Heroes of Delaware* by W. E. Wilson, which is available from Deltos Press, Box 313, Cambridge, Mass., at $2.95 paper, $5.95 library buckram.

Editorials

HOW WELL DO RADIOLOGISTS SEE?

When it comes to cancer of the lung, the answer, alas, is apparently "Not very," or at least, "Not very early." Dr. J. S. Spratt[1] and his colleagues put lucite balls into an x-ray beam to see how big a ball must be before it is recognized when superimposed on a rib or lung shadow. They found that a ball had to be 0.6 cm big before it is visible, and then it can be seen only if there is no rib shadow between it and the film's reader. Since a cancer 0.6 cm already contains 110 million cells, it is estimated that an original single cancer cell has already doubled more than 25 times before the lesion is big enough to be seen and will have doubled about 15 more times in order to be as big as most tumors are at the time of diagnosis. Therefore, two-thirds of a lung tumor's life span occurs before it is even visible by x-ray. Such play with numbers helps to explain the poor survival rates for lung cancer after its diagnosis; it is by then already an old tumor.

The arithmetic also explains why a greater percentage of resectable lung tumors are diagnosed from routine survey films than from patients who have symptoms which make them suspect for lung cancer. By the time one is sick, it is usually too late. So although survey films are not very good with respect to being positive early, they are better than waiting until the first bloody cough. That we do need a better way to make an early diagnosis of lung cancer is obvious.

B.Z.P.

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[1] Spratt JS Jr, Ter-Pogossian M, Long RTL: The detection and growth of intrathoracic neoplasms. Arch Surg 86:283, 1963.

A BUZZ WORD GENERATOR

At a recent technical symposium which we attended, which was sponsored by a certain well-known, very large, and very dignified corporation which shall for reasons apparent on further reading remain herein unnamed, the young men running things were characterized by a certain uniformity of charm, intelligence, dignified affability, and corporate polish. Even the jokes with which they began each session mostly had the air of having been slightly rehearsed and polished for suitability of length, content, and image.

That these young men are not automatons, however, was suggested most neatly by the list of words below which they supplied to us. It is presented here to all who read and write memos, reports, papers. Simply by choosing one word from each column, the author is assured of the marvelously scintillating, modern sentence, perhaps incomprehensible and meaningless, but guaranteed to add twentieth century class to the text.

	A	B	C
1.	Integrated	Management	Options
2.	Total	Organizational	Flexibility
3.	Systematized	Monitored	Capability
4.	Parallel	Reciprocal	Mobility
5.	Functional	Digital	Programming
6.	Responsive	Logistical	Concept
7.	Optional	Transitional	Time-Phase
8.	Synchronized	Incremental	Projection
9.	Compatible	Third-Generation	Hardware
10.	Balanced	Policy	Contingency

The synchronized transitional concept which such a useful list supplies is exceeded only by its compatible logistical options.

B.Z.P.

TAKEN ANY GOOD PICTURES RECENTLY?

We are aware that among our doctors there are many good photographers. The Journal would like to establish as a regular feature a page dedicated to photographs taken by physicians: Medical subjects, travel pictures, photomicrographs of especial aesthetic or scientific interest, etc., etc. Black and white glossy prints are needed for reproduction; they can be returned if you request. Send us your favorites.

Delaware Academy of General Practice

PROPOSED RESIDENCY IN FAMILY PRACTICE

On Tuesday, April 14, 1970, exploratory discussions on the creation of a residency program in Family Practice at the Wilmington Medical Center, were held by Dr. Willard Krehl, Chairman of the Department of Preventive and Community Medicine, Jefferson Medical College of Thomas Jefferson University; Dr. Wayne Martz, Director of Medical Education, Wilmington Medical Center; and several members of the Department of General Practice.

Dr. Krehl was most encouraging and discussed in broad terms the role of the three institutions to be involved in such a program, notably: Jefferson Medical College, the University of Delaware, and Wilmington Medical Center. It was felt that a full time Director of Education in the Department of Family Practice would be necessary and that he would also have faculty assignment at Jefferson.

It was further anticipated that a Master's Degree could be offered by the University of Delaware in Social Sciences and by Thomas Jefferson University in Community Medicine to those residents in Family Practice completing the required credit hours at the respective institutions. Out of this program would come the teaching cadre for training residents in Family Practice as well as medical students to be assigned to the Wilmington Medical Center.

Dr. Krehl felt that such a training program should provide services benefitting the entire state of Delaware. With a greater role to be played in community medicine, the hospital must extend its services into the rural areas where physician shortage is critical, such as in Sussex and Kent Counties. A Family Practice resident commuting on assigned days to health care facilities located in selected rural areas could provide needed medical care. Such a plan could qualify for participation under the provisions of the will of Edward W. Pyle to develop health care facilities in Sussex County.

It was gratifying to learn that efforts to create greater interest in Family Practice are to be made at the first year medical student's level. Jefferson is planning to assign first year medical students as preceptors in family physicians' offices. It has been estimated that approximately 30% of the entering medical students at Jefferson favor Family Practice, but because of previous lack of emphasis on this branch of medicine, most of these students drift off into other specialties. Considering the effect of specialty orientation in medical schools these past 25 years, it is difficult to understand how Jefferson Medical College can give adequate emphasis to Family Practice without the creation of a Department of Family Practice to function on an equal footing and status with other clinical departments. At present, Family Practice is submerged in the Department of Preventive and Community Medicine.

Nevertheless, it is encouraging that action is finally being taken to implement those recommendations set forth in the "Millis Report" and by the National Commission on Community Health Services within the past ten years. These independent bodies concluded their deliberations on the same theme:

Every individual should have a personal physician who is the central point for integration and continuity of all medical and medically related services to his patients.

Recognition and status equivalent to other medical specialities should be given to family practice.

Specialty Board recognition, and diplomate status will be awarded physicians highly qualified in comprehensive care.

Jack Gelb, M.D.

President's Page

DELAWARE'S CANDIDATE

The Medical Society of Delaware is indeed fortunate in having H. Thomas McGuire, M.D., running for the Vice-Presidency of the American Medical Association. Election will take place at next month's annual meeting to be held in Chicago.

Tom has been engaged in general practice and industrial medicine since 1933, and has long been active in both medical organizations and community affairs. He has been President of the New Castle County Medical Society and the Medical Society of Delaware. In 1968 he was the recipient of the Distinguished Service Award presented annually by the Medical Society of Delaware "in recognition and appreciation of devotion to the service of mankind that is the highest goal of our profession, and which, when achieved, justifies the holding of Medicine as the great human calling."

Doctor McGuire has been a member of the AMA House of Delegates since 1952 and has established himself among his many friends as a promoter of Delaware and its contributions to American development. He serves as a member of the AMA Council on Mental Health and the Committee on Mental Health in Industry. As a member of the National Council on Alcoholism he has lectured here and abroad for 23 years.

Doctor McGuire is the senior physician-member of the Board of Directors of Blue Cross and Blue Shield of Delaware, Inc. and was formerly president of the National Association of Blue Shield Plans. He is a past-president of Aces and Deuces. He belongs to Alpha Omega Alpha.

In the civic realm he served as President of the New Castle City Council and currently is serving as a Trustee of the Commons of New Castle.

Doctor McGuire served in the U. S. Army Medical Corps from 1942 to 1946. He saw action in both the European and China-Burma-India Theatres, where he served in the Air Ambulance Service of the Air Transport Command.

Doctor McGuire is a member of the World Medical Association, the American Medical Writers Association, the Industrial Medical Association, and the American Academy of General Practice, and an associate member of the Delaware Psychiatric Society.

With this fine record I know Tom will be the next Vice-President of the American Medical Association.

Henry H Stroud

In Brief

Training Program in Suicidology

A new national training program in suicidology will be conducted by the training staff of the National Institute of Medical Health, in collaboration with the NIMH Center for Studies of Suicide Prevention. Training will take place on the grounds of Saint Elizabeth's Hospital in the District of Columbia, and in a variety of local field assignments.

Persons who qualify for the new NIMH training programs range from those with post-doctoral training in a clinical profession or in the behavioral sciences, to individuals with the bachelor's degree in mental health technology, to suicide prevention center volunteers and community "gatekeepers" — clergymen, policemen, physicians, etc. Persons interested in applying for the new training programs may receive further information and applications by writing to Henry Lederer, M.D., "Training in Suicidology," National Center for Mental Health Services, Training, and Research, NIMH, 2700 Nichols Avenue, S.E., Washington, D.C. 20032.

The Intradermal Tuberculin Test

Earlier this year, the Delaware State Board of Health made a ruling concerning tuberculin skin tests and chest x-rays as they affect all regulations of the Division of Physical Health. The Board ruled that all their regulations which require a chest x-ray be changed in order that any person may, in lieu of the x-ray, have an intradermal tuberculin test. All positive reactors would need to be x-rayed as required by regulation.

In the News

The late Harold L. Springer, M.D., founder of the Swedish Colonial Society, was honored last month at the Society's 332nd anniversary observance of Swedes landing in Delaware, held at Fort Christina Park, Wilmington. Dr. Springer, who died last November 12, was the first president of the Society.

Nature's Insect Control

A California Redwood fun-to-assemble Bird House Kit, made by the handicapped workers at The Sheltered Workshop, Lakewood, N.J. (08701), will help control insects by providing a home for birds that in turn will eat the insects, such as mosquitoes and other garden pests. All precision-cut parts are pre-drilled and an exact fit for nail placement to assure easy and sturdy construction. It is guaranteed never to need painting because the Redwood is completely weatherproof. ($2.25, postpaid).

Speakers on "Ask the Doctor"

Speakers for June, 1970 on the Tuesday radio program (11:05 a.m. WDEL) produced by the Medical Society of Delaware are: June 2, Albert Gelb, M.D., *Gallbladder Disease;* June 9, Richard H. Morgan M.D., *Hypertension*; June 16, Ted Chronister, M.D., *Headaches in Children*; June 23, Howard Cohen, M.D., *Plastic Surgery of the Nose*; June 30, Charles M. Bancroft, M.D., *Emergency Home Care for the Asthmatic.*

New Guide in AMA Series

The AMA Committee on Rating of Mental and Physical Impairment has developed *Guides to the Evaluation of Permanent Impairment — The Skin.* Previously published guides in the series of *Guides to the Evalua-*

tion of Permanent Impairment deal with the extremities and back; the visual system; the cardiovascular system; ear, nose, throat, and related structures; the central nervous system; the digestive system; the peripheral spinal nerves; the respiratory system; the endocrine system; mental illness; and the reproductive and urinary systems. A limited number of copies of this guide may be obtained, without charge, upon written request to the Committee on Rating of Mental and Physical Impairment, 535 North Dearborn Street, Chicago, Illinois 60610.

Rubella Immunization

As of the first of May, 1970, the Department of Health and Social Services, Division of Physical Health has completed the initial phase of its school-based rubella immunization program with over 44,000 individual doses distributed. These were offered to all children between kindergarten and the fourth grade in public and private schools and to all preschools, day-care centers, nurseries, and headstarts.

In order to effectively measure the protection afforded by your efforts so far, the Division of Physicial Health is encouraging the physicians of the State to cooperate with our current program, and report all cases of rubella which they encounter.

These data will be used to assist in determining areas where immunization levels are low enough to support possible outbreaks. Increased information concerning rubella immunization may be required or special epidemic prevention clinics may need to be set up. Also this intelligence will also assist in surveillance for congenital syndrome rubella.

Because of the number of other mild infections resembling it (rubeola, erythema infectiosum, exanthem subitum, mononucleosis, and various echoviruses, coxsackie viruses, and others) the differential diagnosis of rubella is often difficult to make. Where doubt exists as to the diagnosis, the Division of Physical Health can provide the rubella viral studies for the State's physicians. These studies are performed under a contract with the laboratories of the New Jersey State Board of Health.

Ovarian Cancer Study

The cooperation of physicians is requested in the referral of women for the following study being conducted by the Department of Obstetrics and Gynecology at The George Washington University Medical Center, Washington, D. C.

Ovarian Cancer: Referrals of women with proven or suspected ovarian cancer are needed. Selected women with a preoperative diagnosis of ovarian cancer or those with a proven operative diagnosis before radiation therapy or chemotherapy will be studied to determine peritoneal fluid cellular patterns. Attempts at therapy will be made and experimental drugs may be used in conjunction with serial cellular studies.
Interested physicians may write or telephone Doctor Larry McGowan, Department of Obstetrics and Gynecology, The George Washington University Medical Center, 2150 Pennsylvania Avenue, N.W., Washington, D. C. 20037: Telephone (202) 331-6357.

All patients will be carefully followed and on completion of their studies will be returned to the care of the referring physician who will receive a summary of findings.

CLINICAL NOTICES AND MEETINGS

Tuberculosis Today

The National Communicable Disease Center, Atlanta, Georgia will offer the course, *Tuberculosis Today,* five more times during 1970: June 15-19, July 27-31, September 21-25, October 26-30, and December 7-11. Enrollment information and application forms can be obtained from State Health Departments or from the Tuberculosis Branch, National Communicable Disease Center, Atlanta, Georgia.

ASA Meeting

The American Society of Anesthesiologists announces a *Symposium on Basic Sciences Related to Anesthesiology* to be held June 8-12, 1970, at Montefiore Hospital and Medical Center, Bronx, New York. Further information can be obtained from Society Headquarters, 515 Busse Highway, Park Ridge, Illinois 60068.

AMA Annual Convention

Chicago will host the 119th Annual Convention of the American Medical Association June 21-25, 1970. The hub of the Scientific Program will be the International Amphitheatre on Chicago's Near South Side. A special consideration is that physicians *only* will be admitted in the Amphitheatre up to 12 noon on Tuesday, Wednesday and Thursday. This provision will permit physicians to visit at greater length with exhibitors and concentrate upon the special features. Another service provided by the AMA will be free bus transportation between major downtown hotels and the Amphitheatre each day.

ACP Courses

The American College of Physicians announces the following courses: *Psychiatry for the Internist* to be held June 8-12, 1970 at the Baltimore Psychoanalytic Institute and Psychiatric Institute of the University of Maryland School of Medicine, Baltimore; *Cardiac Auscultation* to be held June 15-17, 1970 at New York University School of Medicine, New York, New York; and *Blood Transfusion Therapy and Related Immunology* to also be held June 15-17, 1970 at Michigan State University Department of Medicine, East Lansing. For further information write: Edward C. Rosenow, Jr., M.D., Executive Director, American College of Physicians, 4200 Pine Street, Philadelphia, Pa. 19104.

Biological Systems Seminar

A one-week intensive seminar on computer simulation of biological systems will be presented at the EAI Los Angeles Analysis and Computation Center, El Segundo, California, July 27-31, 1970. A $350 fee will include all notes and textual material.

Alcoholism Society to Meet

The American Medical Society on Alcoholism will hold a two-day annual meeting in Chicago, June 23 and 24, in conjunction with the annual convention of the AMA. Applications for registration may be obtained by writing to Dr. Ruth Fox, President, American Medical Society on Alcoholism, Inc., 150 East 52nd Street, New York, N. Y. 10022.

CLASSIFIED AD SECTION

ORTHOPEDIST: Board-eligible. Available in January 1971. Interested in group or associate practice in Delaware area.

NEUROLOGIST: Interested in institutional location to work with mentally retarded or mentally disturbed patients or in a VA hospital with research facilities. Board-eligible.

EXPERIENCED RECEPTIONIST/SECRETARY: Excellent references. Available immediately. Presently employed part-time basis. Desire full-time employment. Write Society office or phone 655-5275.

For further information, contact the Medical Society of Delaware, 1925 Lovering Avenue, Wilmington, 19806. Ph 658-7596.

"Physician wanted" ads will be listed without charge. All others:

Rates: 30 words, set solid. One insertion, $4.00.
Closing Date: Advertisements must be received by mail by the first of the month for inclusion in the current issue.

Terms: All advertisements payable in advance to Delaware Medical Journal, 1925 Lovering Avenue, Wilmington, 19806.

THE FORUM

Environment And Health

THE GOAL OF THE 1970'S

MARY KATHRYN CARL, Ph.D., R.N.

In the decade of the 1970's, the College of Nursing will continue to prepare to meet the challenges for improved health care in Delaware and the nation. As the health care system changes to meet the increasing needs of the population, the demand for qualified professional nurses becomes imperative. Our College of Nursing is dedicated to the major goal of graduating increasing numbers of highly qualified practitioners of professional nursing.

Professional nursing education, like education in other of the major health professions (ie, medicine, dentistry, social work and pharmacy), has changed over the past decade to accommodate the tremendous strides in the quality and quantity of knowledge related to the biological, physical, and behavioral sciences. In addition, the delivery of quality and modern health services requires professional practitioners who can effectively work within this complex environment.

The College of Nursing is offering two major nursing education programs. The program which leads to the Bachelor of Science in Nursing is the basic professional nursing curriculum. Its central objective is the preparation of the general practitioner of professional nursing. These professional nurses, along with other members of the health team, can plan, deliver, and evaluate health care services. The tasks of nursing are performed by individuals with different amounts and kinds of learning experiences. The leadership and guidance of these individuals are the responsibility of the professional nurses.

The other major nursing education program is designed to prepare clinical nurse specialists. This program leads to the Master of Science in Nursing, with a major in one of the clinical specialties. During the year 1970-71, clinical nursing specialty programs will be offered in Maternal-Child Nursing, Medical-Surgical Nursing, and Psychiatric-Mental Health Nursing. These clinical nursing specialists are experts in their particular clinical field, having considerable depth in supportive sciences as well as a specific clinical specialty in nursing. The nurse specialist is functioning in many modern medical centers, specialty hospitals, and other health agencies. As a team, the specialist physician and the specialist nurse plan and implement regimes of care. They jointly assess the results of their efforts and collaborate in their leadership and consultation.

In the decade ahead, the State of Delaware will require many of these graduates to provide leadership and direct nursing services to its citizens. In 1970-71, it is anticipated that approximately 400 undergraduate students (Bachelor of Science in Nursing), and 25 graduate students (Master of Science in Nursing) will be enrolled in the College of Nursing. In planning and projecting to meet these needs, the College of Nursing is preparing to increase its enrollment by the year 1980 to approximately 700 students on the level of Bachelor of Science in Nursing, and 100 students on the level of Master of Science in Nursing.

Mary Kathryn Carl, Ph.D., R.N., is Dean and Professor, the College of Nursing, University of Delaware.

This page is sponsored by the Delaware Tuberculosis and Health Society.

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

DILANTIN — Legal Action

Damages of $112,866 were awarded by a Maryland trial court jury in a suit against a physician for the death of a patient who reacted adversely to diphenylhydantoin (*Dilantin — Parke-Davis*). The jury returned a verdict for the manufacturer of the drug. There was evidence that the patient died as a result of liver and kidney damage induced by diphenylhydantoin. The patient's survivors contended that death would not have occurred had the physician stopped treatment with the drug as soon as the patient showed evidence of toxicity. The jury was instructed that in order to hold the physician liable, it had to find that he could have prevented the death *if he had followed precautions that he should have known as a general practitioner*. The jury was also instructed that in order to hold the manufacturer liable, it would have to find that the manufacturer had not given sufficient warning of possible adverse effects of the drug. The patient's survivors presented evidence that *toxic reactions* to diphenylhydantoin *occur in at least 5 per cent of patients* taking the drug. The manufacturer contended that the drug is used daily by more than 1,000,000 epileptics, that the medical literature says that a severe reaction to it is rare, and that every adverse effect mentioned in the trial was referred to in the drug guide issued to physicians.
The Citation 20:83, Jan 1, 1970.

(Attention is directed to a *Life* Magazine article published in 1968 (and subsequently reprinted in Reader's Digest) concerning the use of diphenylhydantoin in certain behavioral disorders. The author of the *Life* article, a layman, quoted his personal physician as saying that the drug is one of the safest therapeutic agents available. Dr. Samuel Livingston, an authority in the use of anticonvulsants, registered strong objections, pointing out that untoward reactions to diphenylhydantoin are not few in number, especially in children and young adults, and are not always reversible. Dr. Livingston was aware of at least nine deaths associated with diphenylhydantoin therapy, and had been informed of 11 additional deaths by Dr. M. G. Peterman who has worked with the drug for many years.
Clin-Alert No 157, 1968.

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A NEW PROPOSAL FOR DELIVERY OF AMBULATORY CARE TO "CLINIC" POPULATIONS

• Changing health demands of our society require innovative methods of health care delivery. The author suggests a replacement for the traditional clinic.

Jack Gelb, M.D.

The traditional patterns of delivery of health care to ambulatory patients attending the medical clinics of ours and most American hospitals are obsolete and require drastic overhaul. The major objections are substandard patient care, exorbitant costs, and inefficient use of physician time.

I firmly share the point of view of those medical planners who hold that the needs of our society lie in emphasizing community practice, with the general practitioner being the primary physician supplying comprehensive and continuing medical care.

Substandard care in clinics arises primarily from lack of continuity of care inherent in the present patterns of ambulatory care where with each change of service the patient is passed on to a totally different physician. This fragmentation of care prevents adequate development of a physician-patient relationship with consequent failure on the part of the physician to develop knowledge of the total patient problems and on the part of the patient to be able to communicate his problems to his personal physician, at least for longer than the period of the physician's clinic assignment. The sum total is "clinic psychology," really synonymous with substandard care.

The cost of this substandard care is exorbitant, double the fees charged by most private physicians or even more. (The cost figures released by the Wilmington Medical Center are in excess of $13 per clinic visit which, of course, does not even include a physician's fee.)

See page 155 for Community Health Program

Each week from January through March and July through September, I spend one and one-half hours, travel time included, in attending three to four patients per clinic session. In my own office I can care for at least twice that number of patients and pro-

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Dr. Gelb was president of the Delaware Academy of General Practice, 1968-1970.

vide better care at less than half the cost in the same period of time.

Furthermore, the legislation relating to Medicare and Medicaid stipulates that private medical care should be provided the recipients. The intent of the law is that the same standard of medicine be provided the recipient as all other private patients. This hardly exists in the atmosphere of most present day clinics.

I would like to propose an alternative that would provide better care to the clinic population and the same standard of care which is provided to patients who can afford to take advantage of the services of the private practitioner: medical clinics should be abolished and the medical care of the present clinic patients be assigned to private practitioners.

For this plan to be feasible there are but four basic requirements:

1) Full cooperation of all members of the Department of Medicine and the Department of General Practice in those community hospitals now harboring old-fashioned "clinics."

2) Cooperation of the administrations of community hospitals.

3) The placement of coordinators for community health care in strategic neighborhood locations.

(4) Cooperation of the city, county, and state authorities in establishing an adequate system of transportation and additional neighborhood health facilities (such as SMAC and the proposed Northeast facility in our city).

Wherever feasible, patients would be assigned geographically to the available physicians as determined by demographic studies of physician distribution relative to the living area of the clinic population, with the understanding that all of the community's generalist-internists and general practitioners would participate.

Patients seeking medical care would be assigned to private physicians on an equitable basis by a medical coordinator stationed in neighborhood health facilities established by public funds in appropriate sections of the city and county. The assignment could be by one of two methods. A patient without means of transportation who was assigned to a physician whose office was within the city or its immediate environs would be provided adequate transportation to that office by public conveyance. The services of physicians whose private offices were too great a distance from the clinic population could be rendered in the neighborhood health facilities.

This proposal does not presume to solve or to minimize all the problems inherent in revolutionizing the pattern of health care in our cities. However, the blatant inefficiencies and inequities in the present system and the demands of a changing society require that obsolescence be replaced by health care delivery providing one standard of care, at a reasonble cost in a system making more efficient use of the physician's time.

* * *

WHO SMELLS GOOD?

Perhaps the first sensory research center will use the general public to evaluate odors. The center, being established by Illinois Institute of Technology Research Institute (IITRI), will call on 150 people from the Chicago suburbs to form a qualified panel for odor evaluations. The evaluations will be correlated to gas chromatography characterizations to determine odor thresholds and intensities. According to Dr. Andrew Dravnieks, head of IITRI's Olfactronics and Odor Sciences Center, the results will be used for pollution control evaluations of method effectiveness and to find new methods for reducing odors.

Chemical & Engineering News
September 15, 1969

Supplied by University of Delaware Technical Services.

SEX EDUCATION AND POLITICS

• The incorporation of formal sex education programs into school curricula has become a controversial issue in Delaware's schools.

Thomas J. Reese, ACSW

Public interest in sex education in the schools is good and healthy. It is fortunate that the matter is being aired here in Delaware because as a consequence there is a likelihood that our legislation will be more enlightened and more realistic.

Sex education is a complex issue. It is not just another academic subject, like math or English. It involves the total person — not just the body, but the mind and the emotions. It involves values and morality.

It is generally agreed that, ideally, parents should do the job of sex instruction and preparation for family living. The fact is that many of them don't, and this contributes to some of our serious social problems that are of legitimate concern to the community.

Some of the social problems that at least in part, result from the lack of or inadequate sex instruction are venereal disease, illegitimate pregnancy, hasty marriages, and divorce. In all these forms of social pathology, Delaware ranks high among the states. Even the best sex education programs would not cure all of these problems completely, but should help reduce them and assist the growing individual to find his way through adolescence with more confidence and with less personal anguish.

To expect parents to carry alone the full burden of imparting sex instruction and preparing their children to fulfill their future roles as husbands and wives, fathers and mothers, seems to be unrealistic. Many parents feel inadequate in this regard. Some have a sense of shame or guilt that makes them uncomfortable in discussing sexual matters with their children. There is also the problem of what words to use. They may not know the lingo that their children use or may not be familiar with certain medical or physiological terms. They may not themselves have thought through the implications of the male and female roles in the broader areas of social life.

So complex is the matter of sex education and preparation for family life that it requires a team approach involving the home and also the school, the church, and the medical profession.

The school and the church can stress the importance of parental responsibility in this area and help put parents into a position where they can do their job by offering courses, seminars, and meetings to provide information and to explore attitudes. The school has an obligation to involve the parents in terms of acquainting them with the content of courses, of making them aware of the kinds of teaching aids that are used. The more openness there is on this subject, the less likelihood of the development of rumors and the kind of explosive reactions that sometimes occur. Parental efforts should be supplemented by the school through carefully devised courses and the integration of material

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This paper in a slightly different form was read before the Seminar on Sex Education and School Health sponsored by the Delaware Academy of General Practice on October 11, 1969.

Msgr. Reese is Director of Catholic Social Services, Inc., Wilmington.

at appropriate places in the curriculum.

Ultimately, the issue is not whether or not there will be sex education. If youth do not get educated at home or in school, they're going to get educated in the gutter. Through pornographic literature from unreliable and unsupervised sources, they will likely pick up misinformation and develop unhealthy attitudes. The real issues are, What is the best way to provide sex education, and what is the role of the school?

The Role of the School

I would suggest that the role of the school is the following:

1) To involve parents in explaining and interpreting goals and the method and the content involved in sex education and family life programs.

2) To provide programs of instruction for the parents so that they can do a more effective job at home. This matter of the role of the parents, obviously, is not only, or even primarily a matter of imparting information. The role of the parents is so important because, in their concept of themselves and their dealing with each other — the kind of relationship that they have to one another — the child's basic attitudes toward sex, toward maleness and femaleness are formed, and there is probably nothing that the school can do to compensate for an unhealthy family situation, nor can the church nor the doctor.

3) To integrate material on preparation for marriage and family life at every level of the curriculum as it is appropriate.

4) To give special training to selected teachers who will carry the most direct responsibility. These people, of course, should be screened to be sure they are mature.

5) To provide some orientation for all teachers so they can handle questions that come up in class constructively and without embarrassment.

6) To search out, compile, and develop effective and high quality teaching materials.

7) To use the clergy to assist in the preparation of value and moral content, and, if indicated, to participate in seminars with parents and children.

The matter of values raises a number of questions. In view of our commitment to the principle of separation of church and state, the public school cannot be partisan when it comes to religious values. Religious values are an important element in sex education programs, but their integration into public school programs is a very delicate question. If sex education programs are simply information, dealing purely with physiology and scientific aspects, they are not likely to be effective. But if the public school goes beyond that, it risks the danger of getting into areas that, constitutionally, are out of bounds for the public school. This is a real problem.

Responsibility of the Schools and Public

It is good for the public in general to be interested and concerned regarding sex education, education for family life, and sensitivity training. Schools do have a responsibility to the public, especially in such a sensitive and potentially controversial area as sex and family living. It has long seemed strange to me that industry should go to such great lengths and make such a heavy investment in the training of employees to do a good job of making products for man's use, whereas society does so very little to prepare our future procreators with the knowledge, skill, attitudes, and values that will make them good husbands and wives, good fathers and mothers. Good programs for education for family living are badly needed in our schools, and I think it would be a mistake to enact legislation that would prevent the schools from assuming their share of the responsibility for family life education and would hamstring teachers in this important area of the education of our youth.

Some of the controversy surrounding sex education programs in the schools has stemmed from church groups, usually of a fundamentalist type. Opponents of the program have tried to give the impression that the religious community opposes them.

In fact, many responsible religious bodies which have studied the question have supported sex education programs in the schools. So similar is the thinking of major church groups that they have found it possible to formulate and issue a joint, interfaith statement on sex education. The statement was prepared by the Family Life Division of the United States Catholic Conference (representing the American Catholic Bishops), the Commission on Marriage and Family of the National Council of Churches, and the Committee on Family of the Synagogue Council of America. It is a well balanced statement which says in part:

"Responsibility for sex education belongs primarily to the child's parents or guardians. A home permeated by justice and love is the seed bed of sound sexual development among all family members. Both the attitudes and the activities of the parents toward each other and toward each child as an individual affect his development. Sex education is not, however, only for the young. It is a long life task whose aim is to help individuals develop their sexuality in a manner suited to their stage of life. We recognize that some parents desire supplementary assistance from church or synagogue and from other agencies. In addition to parents and the religious community, the school and other community agencies can have a vital role in sex education in two particular ways. They can integrate sound sexual information and attitudes with the total education which the child receives in social studies, civics, literature, history, home economics, and the biological and behavioral sciences. Secondly, they can reach the large numbers of young people whose families have no religious identification but who need to understand their own sexuality and their role in society."

It was only about a year ago that a national campaign was mounted against sex education programs. Prior to that, there were controversies on the local level when the school authorities, sometimes the parents' groups, would become concerned about some of the social problems and make recommendations that there be something in the way of sex education. These controversies, if you follow the letters to the editor in the daily press, go back here in this community at least twenty years. However, about a year ago there was a direct mail promotion by the Christian Crusade. This is a kind of fundamentalist adjunct of the John Birch Society and is led by the Rev. Billy James Hargis. The organization was in rather desperate straits financially, and they had a promotional campaign that featured the distribution of a booklet by Dr. Gordon Drake, educational director of the Christian Crusade. This booklet was entitled, "Is the Schoolhouse the Proper Place to Teach Raw Sex?" It is a chapter of a larger book that he had written. On family life education, he says, ". . . this overall scheme to demoralize youth, repudiate the so-called antiquated morals of Christianity, drive a cleavage between students and parents, and introduce to curious youth the abnormal in sex, is all part of a giant Communist conspiracy."

This, of course, is a line that appealed to other people, and, subsequently in January of last year the bulletin of the John Birch Society attacked sex education as a filthy Communist plot. Later on, their magazine, *American Opinion*, carried an article expatiating on the Drake material. In March, the Dan Smoot Report picked up the same theme.

Opposition has not been confined to articles. There have been definite attempts to organize opposition. The front organization that is sponsored by the John Birch Society is Motorede, and there is a chapter here in Delaware.

The Opposition to Sex Education

There has been, by SIECUS (Sex Information and Education Council of the United States), an attempt to analyze the tactics of the people who oppose sex education. While sex instruction in the schools has become a cause that is espoused by the radical Right, there are many people — rational, sound, sensible people — who have serious reservations about such programs, and who, in no way, can be classified as belonging to the extreme Right. On the other hand, there is clear evidence that the extreme Right have accepted opposition to sex education in the schools as a high priority program and that they have developed certain patterns that are reasonably consistent in how to conduct the campaign against it. Some of the elements in this pattern are the formation of a local committee (we have more than one) bringing in outside speakers, and seeking church support, especially from the fundamentalist type churches. At hearings, there are usually one or two very fundamentalist type ministers who are talking very much along the lines of Motorede and the Christian campaign. Another element is the disruption of meetings. The use of half truths and dubious documentation is obvious. In discussion with individuals who have strong feelings about this whole matter, I have heard stories that I know aren't true. There was one about the young teacher who, in instructing her class on the facts of life, proceeded to disrobe so they could see what a woman looked like. Maybe it happened, but I am sure it wasn't a consequence of an abusing approach to sex instruction as an indication of the poor girl's dementia.

Another element is the use of emotional appeals rather than rational arguments. Another is casting suspicion on teachers, and this, I think, is a damnable thing because it undermines the role and authority of the teacher and ends up with consequences that I am sure even the radical Right wouldn't want as a final result. There are distribution of literature and a great deal of letter-writing. If you take a look at the pages of our local press, you will find a rash of letters to the editor. There is the use of radio and TV. On the call-in shows particularly, sex education in the schools is one of the favorite topics. There is also pressure on public officials. And the argument is made that, if we have these sex education programs even while at this point they are not too bad, they will lead to a flood of pornography in the schools.

The cumulative effect of this approach is to sow the seeds of discord, to create fear and uncertainty in the minds of our people, and, in the end if successful, to deprive our young people of something they have a right to have. It seems to me that people have a right to know themselves and to know what makes them tick and how they work. This kind of material is certainly a legitimate part of education. It is, admittedly, rather volatile, but, by failing to assume responsibility in this area, we are guilty of increasing some of our social problems and contributing to the terrible anguish of growing up. I think that if these programs are put together properly and if the family, the school, the clergy and physicians all work together, we can make a real dent in some of the social problems we have, even though we are not going to solve them completely.

* * *

G. P. WANTED: REPORT TO THE FORUM

We tend to think of this era as the era of specialization in medical practice. But an ancient Roman historian, Martial, lamented, "Cascellius extracts an aching tooth, Hyginus removes the hairs that hurt the eyes. Hermes is the very Podalarius at the repair of hernia. But tell me, Gallus, where is he that may help my harrassed person?"

And the peripatetic Herodutus reported from Egypt in the 5th century B.C. that "every physician is for one disease and not for several, and the whole country is full of physicians; for there are physicians of the eyes, others of the head, others of the teeth, others of the belly, others of obscure diseases."

4500 years ago, the chief physician of the pharaoh at Gizeh was expected to act as "the palace eye physician, the palace physician of the belly, and a guardian of the royal anus." Who took care of the other parts of the royal person, no one any longer knows for sure.

Rees WD: Personal View, Brit Med J 4:182, 1968.

EARLY DELAWARE PHYSICIANS

III ARCHIBALD ALEXANDER, Delaware Physician during the Revolutionary Period, 1776-1787.

Dr. Archibald Alexander, who served on both land and sea in the Revolution, was prominent in Delaware political life in the years after the war for independence. He was born in Virginia in 1755 of a Scotch-Irish Presbyterian family, which moved to New Castle County while he was still a boy. He was educated at Newark Academy and then studied medicine under Dr. Matthew Wilson. When the Revolution broke out, Alexander joined the county militia as a surgeon; but when he saw that this military organization was not apt to see much action, he sought a post where he would be able to fight as well as doctor.

This he found with the 10th Virginia Regiment of the Continental Line, and he served 2½ years with them, participating in various battles and caring for the sick when the regiment was in camp. But he was looking forward to even more adventures, so he resigned from the Army in order to go to sea aboard a privateer out of Norfolk. His ship captured a number of British merchantmen, and he was getting a great thrill out of this sort of life when off the Virginia capes his vessel came up against a big British man-of-war, which overpowered the American corsair with relative ease.

Taken prisoner, he was sent by his captors to New York, which was then in British hands, and was placed in the British prison ship *Jersey*, anchored in New York Bay. The sufferings aboard this ship were severe, but Alexander survived. After the war he returned to his home near New Castle. Alexander conducted a general practice of medicine, but he also was active politically and was one of the founders of the Patriotic Society of New Castle County in 1794. The society became the nucleus of the Democratic Party. In the election of 1795 the doctor was the first candidate of the Democratic Party for governor. The Democrats that year were for France and republicanism while they accused the Federalists of being for Britain and monarchy. Alexander carried New Castle County, but was defeated by Gunning Bedford, Sr., who won in both Kent and Sussex Counties.

A wealthy man, Alexander took a great interest in the plans to establish banks in Delaware and was one of the signers of a petition to urge the incorporation of a state bank and later was one of the founders of the Farmers Bank of the State of Delaware. The building of bridges was the subject of bitter political controversy in the early 1800's, and Alexander led the drive for the construction of such a bridge across the Christina at Newport. This plan was opposed by Wilmington and the town of Christiana. The move was defeated in the legislature of 1810, but won out in 1813 and the bridge was built shortly afterward. Alexander died September 12, 1822.

Adapted from *Forgotten Heroes of Delaware* by W. E. Wilson, available from Deltos Press, Box 313, Cambridge, Mass., at $2.95 paper, $5.95 library buckram.

* * *

POOR RICHARD ON PERSONAL TAXES

Friends and neighbors, the taxes are indeed very heavy, and if those laid on by the Government were the only ones we had to pay, we might more easily discharge them; but we have many others, and much more grievous to some of us. We are taxed twice as much by our idleness, three times as much by our pride, and four times as much by our folly, and from these taxes the commissioners can not ease or deliver us by allowing an abatement.

Benjamin Franklin

CPC Wilmington Medical Center

The Case of a 45-Year-Old Woman with Fever, a Pulmonary Infiltrate, Hepatomegaly, and Ascites.

Discusser: Allston J. Morris, M.D. *Editor and Pathologist*: Patrick F. Ashley, M.D.

Presentation of Case

A 45-year-old woman was admitted to the hospital with complaints of fever and chills for five days with nausea and vomiting for one day prior to admission. Two and eight years previously the patient had been admitted to the hospital for hemorrhagic gastritis secondary to alcoholic intake. However, on this admission she stated that she had not taken any alcohol for the past ten months. The present illness began with chills, fever, generalized malaise, tiredness and loss of appetite and subsequent nausea and vomiting. The patient also stated that her appetite had been quite poor for "sometime" and that she had "recently" lost approximately 20 pounds. There was no abdominal pain, and her stools were normal in character. She had received no recent medication and denied any history of pleurisy, cough, or production of sputum. She said she never had had pneumonia or tuberculosis.

On admission examination revealed a well-developed, well-nourished negro woman in no acute distress. Temperature was 101°, pulse 120 and irregular, respirations 20, and blood pressure 110/70. Chest examination showed decrease in percussion and breath sounds at the right axillary line posteriorly; no rales or rhonchi were heard. The irregular heart rate appeared to be due to ectopic beats. No murmurs or thrills were heard. The abdomen was not tender; bowel sounds were present and active. The liver was enlarged approximately two to three fingers' breadth below the right costal margin with a firm and non-tender edge. The spleen and kidneys were not palpable, but there was slight right costovertebral angle tenderness. There was no lymphadenopathy.

Laboratory studies on admission revealed WBC of 20,200 with 89% polymorphonuclear leukocytes. The hematocrit was 30% and the hemoglobin 9.4 gm. Urinalysis revealed trace of albumin, rare RBC and 10-12 WBC/hpf. VDRL was non-reactive. SMA profile was normal except for bilirubin 2.2 mg/100 ml; alkaline phosphatase, 221; LDH, 195; and SGOT 175 units/ml. Serum electrolytes were sodium 129, potassium 2.7, chlorides 84, and CO_2 content 22 mEq/liter. Chest examination revealed elevation of the right diaphragm and a pleuropulmonic infiltration at the left base, just above the diaphragm. A patch of pulmonary infiltration was also seen in the mid-portion of the right lung field. The left lung was clear as were the diaphragm and costophrenic sulcus on this side.

The patient remained in the hospital for nine days after which she was self discharged

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Dr. Ashley is Senior Pathologist and Dr. Morris is Senior Attending Physician, Department of Medicine, Wilmington Medical Center.

and refused any further therapy. During hospitalization, her temperature ranged between 101° and 102.4° with no effect from courses of erythromycin and cephalothin (Kelflin, Lilly). Three chest x-ray examinations were performed, but the infiltration noted on the first film persisted with very little change. An EKG showed tachycardia only. Bacteriological studies during hospitalization revealed normal flora from throat and sputum cultures. Initial urine culture revealed *Klebsiella species* with a plate count greater than 100,000 bacteria/ml, but repeat culture three days later showed no growth. Three blood cultures were reported negative for growth after fifteen days. Abdominal paracentesis was performed on the fourth hospital day. A small amount of seroanguinous fluid was obtained. This revealed: RBC, 6,500; WBC 4,600 with 40% polymorphonuclears and 60% lymphocytes. Protein content of the fluid was 3.4 mg/100ml. No bacteria were seen on direct smear, and culture was negative. Electrolyte determinations during hospitalization showed low sodium throughout and low potassium, the latter being corrected with elixir of KCL. At the time she insisted on leaving, the patient's condition was reported as unchanged.

Twenty days after her previous discharge, the patient was readmitted to the hospital with complaints of swollen ankles of two days' duration. She stated that she had been feeling well with good appetite and had abstained from alcohol. There were no respiratory symptoms, and she denied abdominal pain or discomfort.

She was in no acute distress but appeared somewhat anxious. Temperature was 103°, pulse 80 and regular, respirations 18, blood pressure 120/80. There was some possible scleral icterus. Examination of the chest showed slight decrease in breath sounds in the right posterior inferior regions. No rales or rhonchi were heard. PMI was in the fourth left intercostal space, and there were no murmurs, heaves or thrills. The abdomen was markedly distended with shifting percussion dullness. The liver could not be definitely palpated or percussed due to the marked abdominal distention. Examination of the extremities revealed 4+ pitting edema of both ankles with absence of pedal pulses.

Admission laboratory studies included WBC of 17,200 with 83% polys; hematocrit, 32%; RBC, 3.1 million; hemoglobin, 10.0 gm. Urinalysis revealed a trace of albumin. Specific gravity was 1.019; there was an occasional WBC/hpf. SMA profile was as follows: calcium, 7.6; phosphorus, 3.0; glucose, 95; BUN, 8; uric acid, 7.2; total bilirubin, 1.8; and cholesterol, 181 mg/100 ml. Total protein was 5.9 with albumin 1.6 gm/100 ml. Alkaline phosphatase was 550; LDH, 180; and SGOT, 188 units. Serum electrolytes were normal. SGPT was 35 (normal, 5-35), creatine phosphokinase, 8 (normal, 0-40), and leucine aminopeptidase, 190 units (normal, 70-200). Prothrombin time of the patient was 16.0 sec. (control 12.0 sec.). Sedimentation rate was elevated to 77 mm/hr. Chest x-ray suggested a possible subpulmonic effusion not present on the previous admission. An EKG showed mild sinus tachycardia with flattening of T wave across the lateral precordium. Abdominal paracentesis was again performed. On direct smear, no bacteria were seen in the fluid sediment, and there was no growth after three days. No acid-fast bacteria were seen in smear of a concentrate, and no malignant cells were noted on cytological studies. A PPD test was negative.

On the seventh hospital day, the patient was unimproved with a daily temperature of 101° and 102° still occurring. A repeat WBC was 24,600 with 94% polymorphoneuclears. Hematocrit was 34%. Blood and urine cultures were negative. Two LE preparations were negative.

On the fourteenth hospital day, temperature was elevated to 102°. The patient was now doing poorly and was not eating well. WBC were 34,400 with hematocrit 35% and hemoglobin 10.4 gm. Electrolytes were sodium 121, potassium 5.2 mEq/liter; chlorides 93, CO_2 13 mEq/liter and BUN 22 mg/100 ml.

On the seventeenth hospital day, chest x-ray showed changes from the previous study. The heart, mediastinum and trachea were now

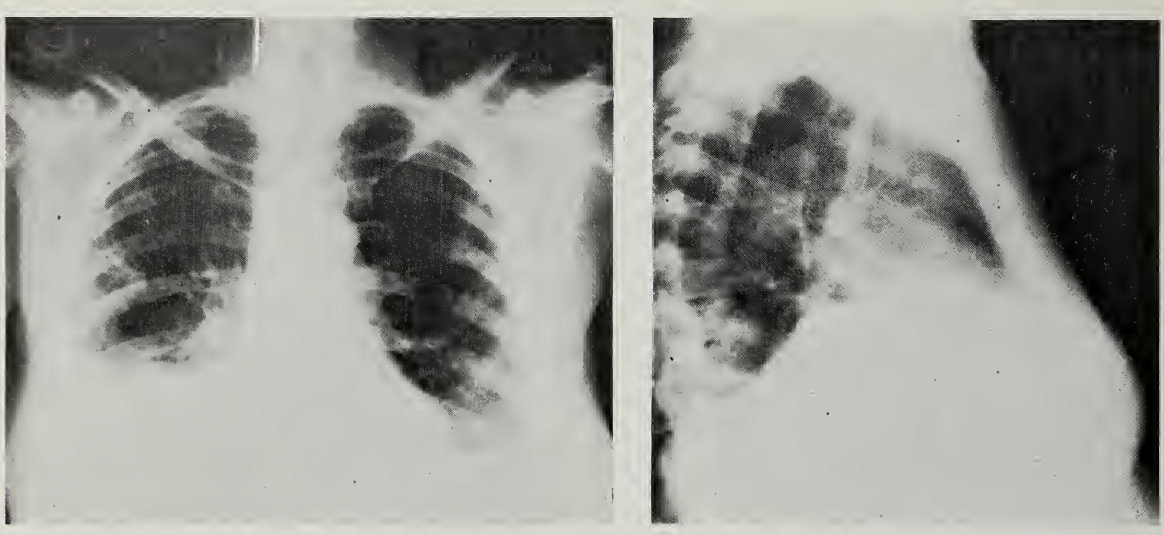

FIGURE 1
There is an infiltrate in the right mid-lung with central area of cavitation. In addition, there is an infiltrate above the right diaphragm and an obscured costophrenic angle on the same side.

displaced to the right, and there appeared to be some loss of lung volume in the right lung. The right hemidiaphragm was high in position. The left lung field had an overall haziness which suggested pulmonary edema or possibly a diffuse pneumonia. No pleural fluid was identified. At this time the patient became short of breath. She had tachycardia, increased pitting edema, and venous distention in the neck. Two days later she was described as having severe pulmonary edema and being moribund. Death occurred the following day.

Differential Diagnosis
Dr. Allston J. Morris:

In its starkest outline the problem is to determine the cause of death of a 45-year-old woman with rather rapidly developing ascites against a background of sepsis. The name of the game, as we all know, is inclusiveness; it is quite all right to arrive finally at an incorrect diagnosis; just be sure that along the way you have at least mentioned the correct one, and have excluded it for reasons that appear cogent to the audience.

For that reason, and for better reasons, it will be useful to consider the causes of ascites. Interestingly, Richard C. Cabot outlined these causes from a study of 5000 cases which he published in the *American Journal of the Medical Sciences* in 1912. Except for the addition of the collagen diseases his list has not been improved in the past 68 years.

Cabot's outline, slightly revised for this occasion, is as follows:

A. Ascites due to hydrostatic forces
    1. Congestive heart failure
    2. Constrictive pericarditis
    3. Nephritis
    4. Nutritional deficiencies
    5. High inferior vena caval obstruction
    6. Cirrhosis
B. Ascites due to infection
    1. Tuberculosis
    2. Subphrenic abscess
    3. Hepatic abscess
    4. Other enteric pathogens
C. Ascites due to peritoneal carcinomatosis
D. Miscellaneous causes of ascites
    1. Solid tumor of the ovary — Meig's Syndrome
    2. Lymphoblastoma
    3. Leukemia
    4. Collagen diseases
        a. Disseminated lupus erythematosus
        b. Periarteritis nodosa

Before going further I would like to ask the radiologist to examine the chest films which

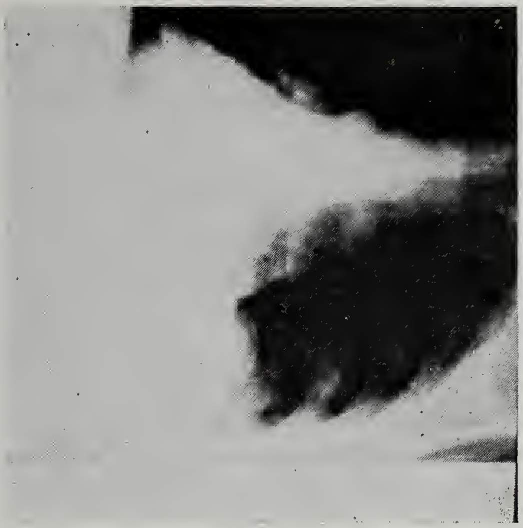

FIGURE 2
Right lateral decubitus shows no evidence of a pleural effusion.

were taken during her two hospital stays. I would invite him to make whatever comments he sees fit, but I would like answers to five simple questions:

1. Is the heart enlarged?
2. Is there reasonable evidence of pulmonary tuberculosis?
3. Is the right diaphragm seen at its usual level and with its usual clarity?
4. Are you utterly convinced that there is a parenchymal infiltrate?
5. Do you see anything to favor a diagnosis of constrictive pericarditis?

Radiology Discussion

Dr. Leonard Lang:

The earliest x-ray from the first admission shows a normal-sized heart, which continues to be normal throughout that admission. It is a little difficult to be certain of the exact size on the second admission since these films were taken in the recumbent position.

The right diaphragm is consistently elevated on all films; the left is normal on all of the erect films.

There is an infiltrate in the right mid-lung area which is difficult to localize on the lateral film. This seems to have a central area of cavitation which is persistent. In addition, there is an infiltrate above the right diaphragm and an obscured costophrenic angle on the same side. A right lateral decubitus film fails to show evidence of a pleural effusion.

The left side has some increase in markings in the mid-lung area which is unchanged until the preterminal films when this side is opacified, probably a result of fluid.

In answer specifically to Dr. Morris's questions: There is no evidence of cardiac enlargement, and I see nothing to suggest a diagnosis of constrictive pericarditis. Almost any pulmonary lesion, especially one with cavitation, could be tuberculosis. If we could establish that this was in the superior segment of the lower lobe, it would be an excellent possibility. The right diaphragm is abnormally elevated. And I am utterly convinced that there is a parenchymal infiltrate.

Dr. Morris:

Having got those unequivocal answers from the radiologist, and reminding you of the picture of sepsis with marked leukocytosis, a virtually normal urinalysis and BUN, we can proceed to strike from consideration congestive failure, nephritis, constrictive pericarditis, peritoneal carcinomatosis, leukemia and collagen diseases. I think it is too early yet to rule out peritoneal tuberculosis.

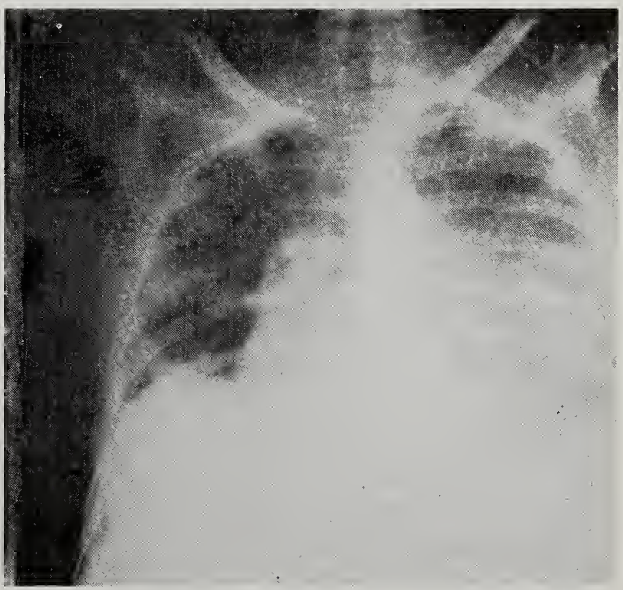

FIGURE 3
In a film made before death, the left lower lung fields are opacified, probably the result of fluid.

Dr. Lang is Senior Physician, Department of Medicine, Wilmington Medical Center.

With your permission I would like to digress long enough to remind you that somewhere in the writings of a well known ophthalmologist, Sir Arthur Conan Doyle, there appears a sequence in which Sherlock Holmes remarks on the curious behavior of the watch dogs. That unfailing straight man, Dr. Watson, says, "But see here, Holmes, I don't remember that the dogs barked at all."

"Precisely, my dear Watson. Just why didn't the dogs bark?"

One wonders, perusing the protocol, just why the dogs didn't bark, at least twice. No mention is made of the results of pelvic examination. One can assume that the dogs were so familiar with the intruder that they wouldn't have barked. — which transcribed to this protocol would mean that, of course, a pelvic exam was done, it was normal, and it was left out of protocol so as not to confuse me. I choose to interpret the omission in that fashion.

I'm not so sure the same can be assumed concerning the liver scan. Somehow I can conceive of a female patient on a medical floor perhaps not having the benefit of a pelvic examination. It strains one's credulity to believe that a patient with ascites and jaundice could spend, in the year 1969, 26 days on a medical service without at least one liver scan. This omission must be interpreted as more sinister.

Two paracenteses were done, one on the first admission, one on the second. On her first admission no mention was made of finding ascites on physical examination. Since the second paracentesis was done while the patient had obvious ascites I'm going to assume that there was not a lymphoblastoma in the abdomen. Obviously this presumption rests on more than the result of the paracentesis.

We are now left with a smaller field. Quite obviously we have infection, and quite obviously we have liver disease.

When Willie (The Actor) Sutton was recently discharged from prison, the *New York Times* attributed to Dr. William Dock the coinage of the "Willie Sutton Gambit." The background is as follows: Someone once asked Mr. Sutton why it was that he always robbed banks. He is alleged to have answered, "Because that's where the money is." It is time to look closely at the liver of our patient, because that's where the pathology is.

On the first admission her laboratory studies included a moderate anemia, total protein of 6.8 gm with albumin of 2. With an albumin so low, one wonders that there was not more evidence of edema. Enzyme studies were elevated, not so high as to make one think of widespread liver-cell damage, but in the range where one might think of an intrahepatic, cholangiolitic obstruction. Time would be helpful in making that determination. Serum sodium was a trifle low, but not so low as it was to become with the rapid development of ascites in a few weeks. Potassium was also low on admission.

By the second admission, four weeks later, the situation had not changed dramatically. Anemia was still present, but not much worse. Total proteins had fallen a bit lower, and so had the albumin. The serum bilirubin was still slightly above normal, but I think not into the range that one might have expected had we been dealing with an obstructing extrahepatic lesion. Nor had the enzymes changed significantly. A few more enzyme levels were measured, but I'm not aware that they contribute to our knowledge very much.

It seems reasonable to presume that our patient had Laennec's cirrhosis. She had a history of alcoholism, including two previous admissions for hemorrhagic gastritis. Her liver was palpably enlarged on the first admission, and the liver function studies were consistent with cirrhosis. But she did not die of cirrhosis alone.

It seems equally reasonable to suppose that she had a severe and overwhelming infection. It remains only to put these two entities together in a credible fashion.

Tuberculosis of the peritoneum cannot with certainty be ruled out. The chest x-ray does not show a lesion of pulmonary tuberculosis but it need not. Tuberculous peritonitis may be secondary to miliary tuberculosis — we really would expect to see that on the chest film — or to tuberculosis of the mesentric lymph nodes, or to genital tuberculosis. Again we're back to the curious "dogs that did not bark."

Also the tuberculin test was normal. This was only done during her second admission — that makes me feel better for her attending physicians were also still wondering at that late date — and at a time when even if she had had tuberculosis, one might expect a state of anergy to change a previously positive skin test to negative.

Finally she had a marked leukocytosis. This argues against tuberculosis, until you recall that Krumbahr, who first described the leukemoid reaction, was writing mainly about patients with overwhelming tuberculosis.

We are left then with a pyogenic infection, either a subphrenic abscess or a liver abscess, or multiple liver abscesses or a combination of liver abscess and subphrenic abscess. Such infections arise by direct extension from contiguous structures, such as an inflamed gall bladder or a penetrating duodenal ulcer; or by the hematogenous route via the portal vein after appendicitis, diverticulitis, even infected hemorrhoids and omphalitis; via the hematogenous route through the hepatic artery from some distant focus, for which we have no adequate evidence in this case; or associated with certain primary hepatic lesions such as primary hepatoma.

We don't have much in the protocol to suggest infection of the gall bladder. The tenderness elicited on her first admission was posterior rather than anterior. We do, however, have something to suggest the possibility of duodenal ulcer. She had, we have assumed, cirrhosis, and the incidence of duodenal ulcer is known to be higher among patients with cirrhosis than in the general, non-cirrhotic public. Further, she had two admissions, previously, for gastritis. Presumably she was x-rayed on those admissions, and no ulcer was seen. It is not difficult to miss a duodenal ulcer, especially a superficial one, shortly after a bleeding episode. At any rate it remains a possibility.

It is a little curious that attempts to recover an organism were so unsuccessful. De Bakey and Jordan writing in Schiff's *Diseases of the Liver* state that blood cultures are usually positive if the infection is bloodborne by way of the hepatic artery. They suggest by omission that one may not have the same luck if the infection arrives by contiguity or via the portal vein. Indeed, a good many of such abscesses are ultimately found to contain sterile pus.

Pleuro-pulmonary complications are the most common of all complications of hepatic or subphrenic abscess, occurring in 15 to 20% of cases. Among such complications are pleuritis and pulmonary abscess.

It is time to rest the case. I believe our patient had an underlying Laennec's cirrhosis, to which was added one or more hepatic abscesses, quite possibly with extension to form a subphrenic abscess. The source of this infection was in the abdomen, and was, in decreasing order of likelihood, perforated peptic ulcer, pelvic inflammatory disease, diverticulitis, appendicitis. Her pleuro-pulmonary findings were all secondary to her intra-abdominal disease. She did not have tuberculosis.

Dr. Morris's Diagnoses

1) Laennec's cirrhosis
2) Hepatic abscess with extension to subphrenic space

Pathological Discussion

DR. PATRICK ASHLEY:

At autopsy the peritoneal cavity contained 3,000 cc of a rather thick, straw-colored fluid. The peritoneum was studded with numerous yellowish miliary nodules, and many loops of bowel were matted together. (Figure 1) Microscopic examination revealed caseous granulomata (Figure 2) in which acid-fast bacteria were demonstrated. Premortem cultures of the ascitic fluid and postmortem cultures of the granulomata grew out Mycobacterium Tuberculosis. The liver was plastered to the diaphragm because of a thick exudate associated with miliary nodulations. There was no evidence of cirrhosis. Microscopic examination revealed scattered granulomata.

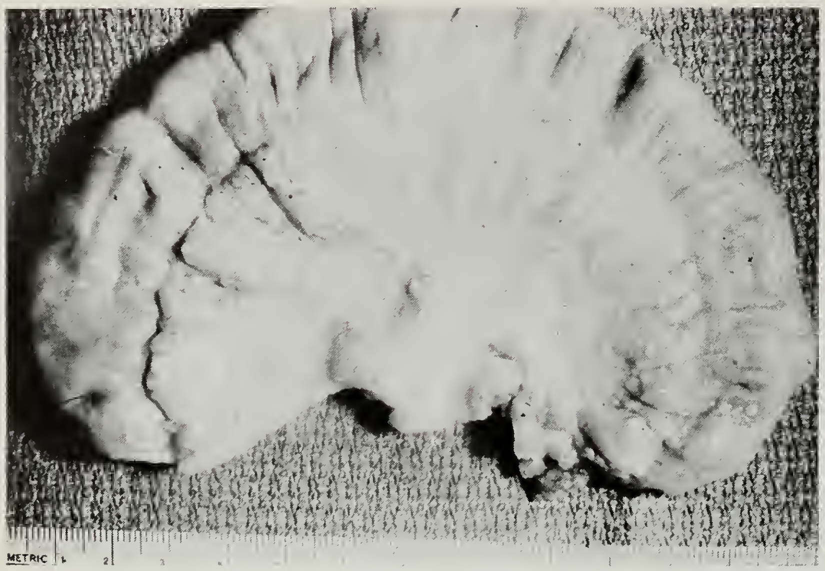

Figure 1
Segment of Small Bowel and Mesentery Showing Miliary Nodules

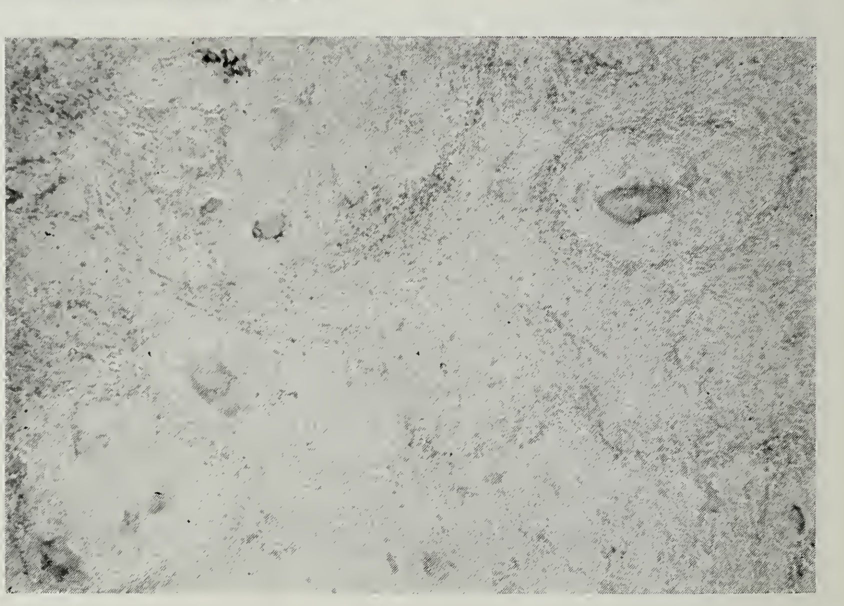

Figure 2
Typical Tuberculous Granulomata (Lower Power)

The spleen revealed numerous miliary lesions. The pleural cavities contained around 500 to 750 cc of straw-colored fluid, and numerous miliary granulomata were present in the lungs. In the right upper lobe, there was confluence of nodulations, but no cavitation. The brain was normal.

In a recent article in the *New England Journal of Medicine*, Singh et al[1] report of 47 patients with tuberculous peritonitis. In each case, diagnosis was based on the finding of a caseating granuloma in a biopsy specimen of the peritoneum. On direct smear examination of ascitic fluid, acid-fast bacilli were found only once. Cultures, however, were eventually positive in 39 cases. The tuberculin test was positive to first strength PPD in all cases. In our case, the false negative tuberculin test was due to a state of anergy following miliary spread, inadequate strength of the tuberculin, or possible faulty injection technique. However, the point to be made from this presentation is that when tuberculous peritonitis is suspected, one should not rely on the results of a single tuberculin test, and in order to establish diagnosis early, some technique for histological diagnosis is indicated.

REFERENCES
1. Singh MM, Brargave AN, and Jain KP: New Eng Journ Med 281:20, 1969.

Highlights

• We invite members of our Society to send in abstracts of their recent publications or presentations at recent meetings so that they may be published in the Journal and thus shared with their colleagues.

DEVELOPMENT OF A COMMUNITY HEALTH COORDINATOR PROGRAM.

William H. Duncan, M.D. — *Director of Ambulatory Services;* Mary Mitchell, *Sociologist and Administrative Assistant in Special Services; and* Lillian Jones, *Community Health Coordinator, Wilmington Medical Center. New Castle County Medical Society, January,* 1970.

Over two years ago the Wilmington Medical Center (WMC) was approached by numerous organizations in the city, the foremost of these being the Neighborhood and Housing Health Subcommittee of the Greater Wilmington Development Council, to help implement a plan to be sponsored by the WMC. After much dialogue with a great number of agencies, the WMC Community Health Coordinator Program was developed, the basis of this program being to have liaison persons placed in one or each of four specified ghetto areas namely, West Center City, East Wilmington, Northeast Wilmington, and Southeast Wilmington (Southbridge).

Studies have shown that individuals in the inner city of Wilmington do not seek medical care until a health crisis develops. Our program was designed to be broad-based and directly geared to lending assistance, assurance, education, registration and follow-up.

The purpose of the coordinator would be to bring health and welfare services directly to the area residents needing the services most. Improved communications and thereby better medical care for individuals and families in the assigned area represent the goal and eventual effect of change.

Other reasons for the development of this program include a 35% "no show" rate in WMC clinics and the over-utilization, for non-emergencies, of the emergency rooms of the Wilmington Medical Center, as well as the lack of utilization of such services as Home Care, Visiting Nurse, Red Cross transportation and many others.

The choice of the area of West Center City (Third and Madison Street office placement) as the pilot project area was based on the conclusion that of the four areas, this one was the area of greatest need as well as being an area with easily identifiable and reliable community leadership.

See Dr. Gelb's article on page 141

The criteria set for the first coordinator were that of working currently in the Medical Center and living or having lived in the area chosen. Mrs. Lillian Jones came closest to meeting these criteria because she had been employed for ten years at the Medical Center and because she had once lived in the West Center City Area. Her knowledge of the area and her enthusiasm to accept the position both favored her appointment.

On February 10th, 1969, Mrs. Jones became the Wilmington Medical Center's first Community Health Coordinator. For a period of three months, there was a very thorough and detailed orientation period during which the Coordinator was exposed to all of the WMC divisions, clinics, and emergency department services, and thirty different health and welfare agencies and institutions in the community. This training program afforded an opportunity to share the intent of the program and also to determine the best and most suitable source of referral for various health problems.

There were numerous agencies not initially contacted because of the urgency to begin operation. However, other agencies have been contacted as needed whenever requests from residents indicated a need for their specific services.

The following represent some of the coordinator's major duties:

1. A direct liaison between neighborhood residents and the WMC, using publications, programs, and home visits.
2. Individualized contact for individuals in need of health services and welfare services.
3. Contacting individuals needing continuing care from the WMC.
4. Coordination of transportation needs related to receiving medical care.
5. Visitation of hospitalized residents from the area served in order to facilitate discharge and follow-up planning.
6. Evaluation of current medical service provision and recommendations of how care may be upgraded.
7. Identification of qualified or qualifiable personnel to work in the health field.
8. Consultation with the wide spread of skills and expertise in the many fields of activity of the WMC.

While we are presently serving only one area in this way, the need and demand are equally great in the other areas mentioned. The Regional Medical Program has recently approved but has not yet funded a three-year combination training and operational program for additional community health coordinators. Meanwhile, neighborhood centers are being encouraged to provide people to be trained for this work in their own neighborhoods.

NEONATAL JAUNDICE*

Mary Louise Soentgen, M.D. — *Director Newborn Nurseries and Assistant Professor of Pediatrics and Obstetrics and Gynecology at Jefferson Medical College.*

Jaundice in the newborn period can cause many anxious moments for both the new parents and the pediatrician. Differential diagnosis of the etiology of the hyperbilirubinemia is most important in the management of the infant. However, one must keep in mind that regardless of the etiology of hyperbilirubinemia, kernicterus, with all its sequellae, can be the end result if the bilirubin level goes high enough. Generally, total bilirubin of 20 mg during the first four to five days of life is an arbitrary cut-off figure for performing exchange transfusion. However, some infants will develop kernicterus at a lower total bilirubin level. The premature infant, the infant with hypoxia, or any infant with central nervous system damage may convulse from kernicterus at a lower bilirubin level because of the fact that the toxic substance, indirect bilirubin, is being applied to an already damaged or immature central nervous system which is more susceptible to its toxic effects.

The premature infant with hyaline membrane disease is not only more prone to develop hyperbilirubinemia but will also develop the clinical signs of kernicterus at a lower bilirubin level. One must use a total bilirubin of 15-18 mg% as a criterion for exchange transfusion in these infants depending on the age of the infant, the time of onset of jaundice, and the weight of the premature. The increased disposition to hyperbilirubinemia in these infants may be in part due to the immaturity of the liver enzymes, or the relative lack of the enzymes. However, it may be in part due to the persistence of the ductus venosus and the shunting of blood through the liver.

Other infants more prone to develop kernicterus at a lower bilirubin level are those who have had prolonged hypothermia. This has been documented using the Gunn rat, homozygotes of which all die of kernicterus because of an absence of liver enzymes. If these animals are subjected to hypothermia, they will die sooner than their litter mates who have not been subjected to hypothermia.

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*This paper is adapted from a presentation at the Pediatric Conference, WMC, November, 1969.

A brief review of bilirubin metabolism should be kept in mind. One mol of bilirubin requires 2 mols of glucuronic acid. One gram of hemoglobin produces 34 mg bilirubin. One mol of albumin binds 2 mols of bilirubin, and one gram of albumin binds 16 mg of pigment.

A working differential of the etiology of jaundice can be based on the time of occurrence, keeping in mind, however, that occasionally the etiological causes can overlap time periods.

Jaundice occurring in the first 24 to 48 hours is never physiological. It is always pathological.

The most common cause of jaundice shortly after birth is Rh sensitization (an Rh negative mother and an Rh positive infant). Unless the mother has been previously sensitized, by either miscarriage or an incompatible blood transfusion, the first infant is never involved, but each subsequent pregnancy is more severely involved. With the use of maternal antibody titers and amniocentesis, one can anticipate problems.

The direct Coombs is almost always positive in the Rh sensitized infant. However, if the infant is severely sensitized, there may be a false negative direct Coombs since the infant's cells will be coated with maternal antibodies.

One out of every 20 Rh sensitized infants is severely enough affected to require exchange transfusion. The most severely affected infants die in utero of hydrops fetalis.

Hydrops fetalis, (profound cardiac failure secondary to anemia), can occur with any severe hemolytic process in utero; it is not limited strictly to the Rh sensitized infant. It may occur, although not as commonly, with the "little factors" or ABO incompatibility.

Intrauterine transfusions of packed cells to the Rh sensitized infant does not preclude the necessity for exchange transfusions after birth but does prevent the infant from dying of intrauterine cardiac failure before gestational age is compatible with life.

ABO incompatibility is more common than Rh incompatibility if one considers random marriages. However, only one in every 40 ABO incompatibilities necessitates an exchange transfusion. Incompatibility occurs most frequently in the O mother and the A infant but may also occur in the O mother with the B infant, A mother and AB infant, or B mother and AB infant. The direct Coombs is usually negative but can be 1+ in the severely affected infants.

The small blood group incompatibilities such as little "c", Kell, Duffy, big or little "s", McGregor, etc., are not as prevalent. They all give a markedly positive direct Coombs.

Congenital spherocytic hemolytic anemia can occur in the hyper acute form in the immediate neonatal period. The direct Coombs is negative. Bilirubin levels can rise high enough to require exchange transfusion. This disease is Mendelian dominant; if spherocytes are found in the peripheral smear of one of the parents, the diagnosis is confirmed. The presence of spherocytes in the peripheral smear of the infant alone does not always mean spherocytosis, for spherocytes can be present in ABO incompatibility, transfusion with incompatible plasma, after some drugs, and from exposure to extremes of temperature (thermal injuries).

Congenital nonspherocytic hemolytic anemia can also be the etiology agent of hyperbilirubinemia in the first 24 to 48 hours of life. Here the direct Coombs is negative. It is caused by a deficiency in the enzyme pyruvate kinase and is transmitted as a Mendelian dominant.

G-6-P-D deficiency can occur in the immediate newborn period. It is five times more common in the negro than the white, is sex linked, and sex modified. Usually there is a precipitating agent such as vitamin K, sulfa, or nitro-furantoins. However, a small percentage of infants with this disease will hemolyze without the presence of an offending agent.

Vitamin K, sulfa drugs and the nitrofurantoins in the immediate newborn period should always be avoided since these drugs compete for the glucuronyl transferase system of the liver and bind to free albumin with greater affinity than does indirect bilirubin. Vitamin K_1 has not been incriminated.

Sickle cell disease never presents with hemolysis in the immediate newborn period; one does not need to consider this disease until after four months of age. Full term newborns normally have about 75% fetal hemoglobin; the premature has about 87%.

The familial hyperbilirubinemias such as Criggler-Najjar Syndrome may produce bilirubin levels requiring exchange transfusions in the first 24 hours but are rare.

Acquired intrauterine sepsis is an important etiology of jaundice in the first 24 to 48 hours of life. These infants are clinically septic at birth. Cytomegalic inclusion disease may present with jaundice hepatosplenomegaly and microcephaly or hydrocephaly. Toxoplasmosis can also produce hydrocephalus and jaundice; skull films of these infants may reveal intracranial calcifications, and the other clinical manifestations should make the diagnosis apparent.

Active syphilis occurs in infants whose mothers contracted the disease at about eight months' gestation and were untreated. There is direct placental transfer of the spirochete; cord blood will reveal spirochetes with dark field technique. The infant will be jaundiced, have hepatosplenomegaly and the rash of secondary syphilis. If the disease is severe in utero the infant will be born with hydrops fetalis.

Hyperbilirubinemia first occurring on the third or fourth day of life presents another list of possible etiological causes.

The most common cause is physiological jaundice, due to the normal breakdown of red cells in an infant who has decreased activity of the liver enzyme systems or insufficient free albumin to conjugate the indirect bilirubin. If the cord was diligently milked at birth with a resultant high hemoglobin in the infant, jaundice will be greater. Reabsorption of blood from a large cephalohematoma or facial suffusion may also produce physiological jaundice.

The jaundice first occurring on the third or fourth day of life that one worries about is that due to sepsis. These infants will be lethargic, poor sucking, and have a subnormal temperature, as well as jaundice. Any question of sepsis in the neonate is justified for treatment with antibiotics. The most common organism affecting the newborn is *E. coli.*

Another frequent cause of jaundice during this period is breast feeding. This is due to the transfer of pregnandiol through breast milk which competes for the liver enzyme system. Another contributory factor is the relative decrease in hydration of the breast-fed infant. Maternal milk does not come in until the third or fourth day. If the nursing mother is encouraged to supplement breast feeding with glucose water during the first four or five days, this problem can be alleviated. Glucose water provides better hydration for the infant as well as stimulation for the liver enzyme system.

When jaundice persists into the second week of life, one must consider neonatal or giant cell hepatitis and the biliary atresias. The direct bilirubin will be elevated in these cases. Differential between these disease entities is extremely difficult since liver enzymes are elevated in both.

Direct bilirubin elevations in the jaundiced newborn can occur in the inspissated bile syndrome. This disease occurs in the infant with severe hemolytic disease who has had multiple exchange transfusions. Two theories as to the cause are damage of the liver cells per se so that bilirubin cannot be conjugated or precipitation of bile in the ducts.

Jaundice of galactosemia occurs about this time, but the other clinical manifestations of the disease aid the diagnosis.

Until recently the only means of lowering serum bilirubin levels was by exchange trans-

Differential Diagnosis of Jaundice Dependent on Day of Appearance

24 to 48 Hours	Third and Fourth Day	Beyond 10 Days
Rh incompatibility	Physiologic	Biliary Atresia
ABO incompatibility	Sepsis	Neonatal or giant cell hepatitis
Small group incompatibilities	Breast Feeding	
Kell		Galactosemia
Duffy		
little c		Inspissated Bile Syndrome
big or little s		
Glucose-6-Phosphate dehydrogenase deficiency		
Spherocytic Hemolytic Anemia		
Nonspherocytic Hemolytic Anemia		
Familial Hyperbilirubinemia		
Intrauterine Acquired Infection		
Toxoplasmosis		
Cytomegalic Inclusion Disease		
Syphilis		

fusion, the risk of this procedure varying with the experience of the physician.

Several new methods have been suggested for decreasing bilirubin levels. One method is to give 0.5 gm of activated charcoal in the formula at three hour feedings. The rationale behind this method is the binding of indirect bilirubin in the G.I. tract. This has not been recommended for usage in hemolytic diseases.

Another method employed is to use phenobarbital (3 mg/kg/dose). Phenobarbital stimulates the liver enzymes. This method is also not recommended for the treatment of hemolytic diseases. Although phenobarbital does stimulate the enzyme systems of the liver, we are not using this method on our prematures for it depresses the respiratory system. Since most of the infants with jaundice are premature with some degree of respiratory distress, this method is not recommended. Ideally phenobarbital should be given to the mother prior to delivery, but more research is needed in this area.

The newest and most reliable treatment to decrease bilirubin levels is phototherapy. With the use of phototherapy the exchange transfusion rate in our intensive care nursery has been decreased about 60%. Although phototherapy cannot prevent the first exchange in those infants with severe Rh sensitization, it may alleviate the necessity of subsequent exchange transfusions.

Bilirubin is a fat soluble substance and as such is fixed in the subcutaneous and adipose tissue. With the use of cold blue light the bilirubin is broken down into biliverdin and water soluble substances that can be excreted via the kidney.

Premature infants are placed under the lights when the total bilirubin level is 6-8 mg% depending on their birth weight. Full term infants without other problems are placed under the lights at bilirubin levels of 10-12 mg% depending on their age.

When phototherapy is being used to drop bilirubin levels, the hemoglobin should be carefully monitored. Since antibodies are not removed as they are with exchange, the infant may continue to hemolyze for a longer period of time, thus dropping its hemoglobin low enough to necessitate small transfusions of packed cells for correction of anemia. This may occur two to three weeks after the discontinuance of light therapy.

One precaution should be kept in mind when phototherapy is being used. The infant's eyes must be carefully and completely covered to prevent damage from the light.

BUT THE GREATEST OF THESE IS PATIENT CARE

Samuel P. Asper, F.A.C.P. — *Immediate Past-President of the American College of Physicians; Professor of Medicine, The Johns Hopkins University School of Medicine, and Physician, The Johns Hopkins Hospital. Excerpted from his address, Academic Practitioners and Practicing Academicians, to the Maryland-District of Columbia Meeting of the American College of Physicians, Baltimore, Md., October, 1969.*

Each of us is a point on the long moving line in medicine . . . . There is a strong and common bond between medical educators and medical practitioners, between full-time faculty and part-time faculty. For this reason, I have always been somewhat intolerant of the issue of town and gown, of the jealousies and conflicts between those in private practice and those in academic medicine. At the very least, I have felt that two parties holding common objectives of excellence in practice, research and teaching, who have been raised together in medical school and are brothers in the profession, should be able to discuss without rancor their problems and obtain reasonable solutions. Excessive idealism? Perhaps so, on my part, yet if we are to advance, mutual understanding and confidence between academicians and practitioners are essential.

There is evidence, I believe, that much has been accomplished in recent years to bring the academician and the practicing internist closer together . . . .

Although the problem is not fully resolved there are strong indications of improvement. This restoration of mutual confidence has come not so much from common efforts of academicians and practitioners to heal their wounds, for many have tried with limited success; rather I think other factors have served to facilitate the healing.

One of these is our increasing social awareness of the health needs of our citizens. Because of the shortage of physicians, the teaching hospitals have been obliged to serve to a greater extent as the family physician, to train physicians and physicians' assistants for a larger role in patient care and to enter into community health programs. Likewise, the medical schools have developed new attitudes. Faculty have recognized that medical services, especially those of a complicated nature, are not fully available to the public and that, as our leaders in government proclaim, these advances are justly due to all who might benefit from them. . . .

. . . . Medical students, likewise, have voiced their new alertness of social problems by calling for revisions of curriculum which would allow them in their very first year to see patients. And most faculties, while safeguarding the traditional and proved value of broad science preparation for clinical medicine, are inclined to accept the students' point of view. For 25 post-World War II years medical schools have confined the experience of their students to laboratories and to the wards and clinics of the teaching hospital. Now, as in prewar years, medical students are seeing some patients in homes and schools. . . .

The new problems facing us of extending quality care with a limited number of physicians and of utilizing the rapid advances of science especially in biomedical engineering appear to outweigh the old in both relevance and importance. Thus, there is no longer room for incompatibility among any group of physicians. To solve our new problems, however, we turn to the well-known triangle of medicine: teaching, research and patient care. Each portion of the triangle is essential for strength and for avoiding the forces of distortion. . . .

. . . . I believe that you would agree with me that the apex of the medical triangle is patient care, for in the absence of sincere concern for the needs of the sick, teaching and research have little meaning. Teaching, research and patient care, these three, but the greatest of these is patient care.

Editorials

SICK AND YE VISITED ME

"For the safety and comfort of the patient, please limit visitors to two per patient." This silent admonition in the lobby of our medical center is undoubtedly frequently read and just as frequently ignored. Visiting habits in all of our hospitals have reached a deplorable state. In violation of the visiting regulations, I have recently observed as many as eight to ten visitors descended upon one patient at a particular time. Thoughtless visitors are seen overcrowding semi-private rooms and wards, smoking cigarettes and cigars, watching television shows, lounging on the patient's bed and in general behaving in an obnoxious manner. The discomfort of the patient that results from this type of visitor is obvious to the physician, the nurse and indeed to the patient, himself. Why it is not obvious to the visitor remains a mystery.

Well-conducted clinical studies have demonstrated the hazard to hospital patients from frequent visitors, who produce an increase in the bacterial colony count of the air in the room. However, the non-scientific observation of a crowded room filled with cigarette smoke and noise, with complete invasion of the privacy not only of the visited patient but also of any other patient in the room, should make elucidation of any further scientific reason for visitor control completely unnecessary.

What motivates the hordes of visitors who descend upon the hospitals during the evening and weekend visiting hours? There is no need to discuss the motivation of the concerned close relative. He or she should be in attendance and probably seldom presents a visiting problem. But what about the motivation of all the other visitors? In many instances, questioning has revealed that they have not seen nor visited the ill patient for months and sometimes even years prior to his being admitted to the hospital. Perhaps there is a feeling of guilt associated with this hospital visit as if this might be the last chance to pay respects to a suffering friend.

Some visitors are attracted to the hospital by the excitement and flavor which has been promoted by novels, movies and television shows concerning hospital life. However, the romance and intrigue suggested in these media appear much more exciting than the real thing.

Are some hospital visitors responding to the New Testament reference "I was sick and ye visited me" (Matthew 25:36) or to the admonition in the Apocrypha (Ecclesiasticus 7:35) "Be not slow to visit the sick: for that shall make thee to be beloved"? It should be interjected here that the word used for visiting in Biblical times has lost some of its meaning in the translation. In those days, it actually meant to look out for someone or to care for him. In other words, the purpose of the visiting was to render some physical aid to the ill person rather than just to pass the time of day.

What should be done by hospitals regarding the frequent violation of visiting regulations? Policing of hospital entrances to enforce the regulation of two visitors per patient would produce an unfriendly atmosphere at a time when hospitals are attempting to improve their public image and most hospitals have so many entrances that such policing would be very difficult. Should the nursing service utilize volunteer personnel to supervise the halls and request excess visitors to leave the hospital? This approach might result in some improvement in the situation, but also has the potential for producing ill-will.

Is it possible that education of the public would result in improved regard for visiting regulations and thus for the comfort and safety of the patient? Can we convince relatives and friends that there is a reason for requesting limited visiting especially for patients in semi-private and ward accommodations? Can we make it obvious to friends and relatives that when visiting a hospital, one must be careful to respect the privacy and privileges of patients? It is past time that an intensive program of such public education be undertaken by hospitals with the assistance of local news media.

In the words of Samuel Johnson, "Visitors are no proper companions in the chamber of sickness."

W.J.H.

* * *

LABELING PRESCRIPTIONS

The pharmacists' page this month details the experience of a pediatrician in Oregon who carefully studied his prescriptions in order to determine how meticulously his directions were transcribed by the dispensing pharmacist. The results were appalling: 53% of his prescriptions were not labeled although his blank contains printed directions to the pharmacist to do so. Five of his prescriptions — out of an unspecified total number — were in error with respect to the complete transcription of his directions for site of application, purpose, or time.

See page 168 for details

During my years as a house officer in our local medical center, I succeeded in getting directions to label included in the text of the hospital's prescription form. At my suggestion a direction to label was included on the blanks used locally for Title XIX prescriptions, but these prescriptions are now filled on the individual physician's own prescription blank and are therefore left to his discretion with respect to labeling.

For many years, I have ordered my own prescription blanks with directions to label included in the printed text of the prescription, and when my instructions to a pharmacist include labeling and this is not done, then in my opinion the prescription has been misfilled, and I so tell the pharmacist. There is no more excuse for ignoring a direction to label than there is for dispensing a drug not called for, or for improperly writing directions. But I continue to wage a battle with local pharmacies who too often ignore my very clear request.

The reasons stated for this have varied. One man told me I had better circle the word *label* if I really meant it. Another suggested that I outline it in red. Others merely apologize and promise to try to do better, over and over again. I have now begun to tell my patients that their prescriptions were filled incorrectly when I discover medications which have not been labeled as requested. I suggest that the patient himself present the unlabeled container to his pharmacist with a request that the sticker be corrected, and that the patient warn the pharmacy that if it does not in the future fill prescriptions completely according to directions, he will take his prescription business elsewhere.

Recently I had the opportunity of glancing at a copy of *The New England Journal of Medicine* from 1937. The total medications advertised in that issue were limited to protamine zinc insulin, ferric sulfate, ferric citrate, digitalis, and mercurochrome vaginal suppositories. The therapeutic armamentarium at that time was far less complicated than it is today, and the problem of identifying unknown medications thus much less formidable. In addition, patients were much less apt to consult any but the physician originally directing them to take a medicine. But this is the age of Aquarius, the age of anxiety, and the age of modern medicine. Patients take a wide variety of pills, tablets, capsules, not all of which are immediately identifiable by all physicians. Patients travel; so do doctors. Drug reactions are common, and patients complaining or worrying about untoward responses should in the main be able rapidly to identify the offender. Many patients take more than one medication; drug doses are flexible; the individual drugs require names in order that the almost inevitable errors of taking medicine be kept to a minimum. The need for identification of a medication is frequent, and should be faciliated.

In my opinion, *all* physicians should request that *all* of their prescriptions be labeled except in those rare instances where they have some specific reason not to do so. And all pharmacies must learn that compliance with this request is requisite to proper filling of the prescriptions entrusted to them.

B.Z.P.

President's Page

THE PUBLIC LAWS COMMITTEE

The President's Page this month was written by Allston J. Morris, M.D., Chairman of the Public Laws Committee

Should the Medical Society of Delaware support a bill, now in the Senate in Dover, to appropriate $58,000 to establish a program for renal dialysis in Delaware? How should the Medical Society view the prospect of licensing physicians' assistants? Does the Medical Society support the desire of the chiropractors of the State to receive payment under Medicaid? Is the Society against air pollution?

These are some of the problems currently being argued at meetings of the Public Laws Committee. Its prime function is to advise the Council of the Society of bills pending before the Legislature in Dover, and to recommend what should be the position of the Society.

Of course, the Society should be against air pollution: our House of Delegates made our position clear in October 1967. But H.B. 523 and H.B. 570, now in committee in Dover, seem to have fatal flaws, even though their intent is laudable. Each bill fails to define objective criteria by which excessive levels of fumes or noise could be measured. The Committee has proposed that while reiterating our position in opposition to pollution, we should request that these two bills be rewritten to include objective criteria, or, failing that, the Society should oppose passage of these bills.

The idea of chiropractors receiving compensation under Medicaid is vigorously opposed by the Committee, and they have so recommended to the Council. Dr. Joseph Belgrade of the Committee testified at a public hearing on this bill. The stated position of the Society is that chiropractors are cultists attempting to make diagnoses and treat patients through a body of doctrine which is not based on scientific evidence; that their payment under Medicaid would uselessly cost extra money for which little or no value would accrue; and that to cloak them with the further legitimacy of inclusion in this program would be to mislead the citizenry.

The question of the role of physicians' assistants is a difficult one. A few states have laws which license them. The Colorado law, for instance, carries a longish list of drugs which may be prescribed by physicians' assistants. The AMA has taken a temporary position, while studying the problem further, that licensing laws are not necessary. The University of Delaware is interested in training physicians' assistants. It would be paradoxical if the University of Delaware were indeed to graduate well-trained physicians' assistants, only to find that for lack of a licensing law they could not be used in the University's own state. Because of the obvious need for more intensive study of this problem, the Public Laws Committee advised that an ad hoc committee be appointed specifically to study this problem. Dr. Marjorie J. McKusick of the Public Laws Committee is Chairman of the ad hoc committee.

Whether to back a proposal to appropriate $58,000 for initiation of a program in renal dialysis for Delawareans with chronic renal disease has been a difficult decision to reach. No one would wish to be counted as against the unfortunate individual with chronic renal disease. But it was not so simple as that. One might ask, How many patients could be expected to benefit from such a program? The answer based on experience in other states and based on our own population, was that between five and fifteen patients might benefit. Where does such a program lead? Isn't it implicit in establishing such a program that many of the patients who would be treated would be expected to receive renal transplants? Are we ready for a transplant program either technically or financially? Is $58,000 needed elsewhere, in a setting where more people would benefit? The answer to this question seems easy. The same $58,000 spent in a well-organized well-baby care program would affect a very much larger segment of the population. Finally there is at least one well-established renal dialysis program for chronic renal disease, only a few miles inside Pennsylvania on I-95. Could less money provide the same care by paying for Delawareans to receive their care in an established program in Pennsylvania?

It was with reluctance that the Public Laws Committee voted unanimously to recommend that the Society *not* support S.B. 523. The Committee now is pondering, and perhaps all of us should, whether the Legislature and the Governor might not be well served by a permanent advisory group to assist in determining how the health care dollar should be spent. It is possible that even in so small a state as Delaware there is no one who comprehends this whole problem. It includes support of the voluntary hospitals, the state institutions for mental health, out-patient facilities, special groups like the aged and the blind, vocational rehabilitation, health education, medical education, nursing education, and the development of programs to train paramedical personnel. It includes the protection of the health of workers in industry and on farms, and the protection of school children from preventable infectious disease. In such a complex situation it takes great wisdom to know how many of the taxpayers' dollars should be spent to help those with chronic renal disease.

These are a few of the problems the Public Laws Committee deals with. If you have legislative axes to grind or just constructive criticism to make, why not write to the Committee or, better yet, attend one of their meetings?

Henry H Stroud

* * *

MYCONOS

Stuart W. Rose, M.D.

Contax II, 28 mm. lens
Exposure: F 16 at 1/50 sec. with
R 10 filter on Panatomic X film.

In Brief

Speakers on "Ask the Doctor"

Speakers for July, 1970, on the Tuesday radio program (11:05 a.m. WDEL) produced by the Medical Society of Delaware are: July 7, Bernadine Z. Paulshock, M.D., *Diet and Weight Loss;* July 14, Charles R. Green, Jr., M.D., *Population Explosion;* July 21, Herman Rosenblum, M.D., *Streptococcal Infections;* July 28, Richard Kahlbaugh, M.D., *Meningitis.*

In The News

Dr. Herman Rosenblum, a member of the Editorial Board of the Delaware Medical Journal and coordinator of medical education and clinical services, Department of Pediatrics, Wilmington Medical Center, was informed recently of his promotion to clinical associate professor of pediatrics at Thomas Jefferson Medical College. Dr. Rosenblum has been assistant professor of pediatrics at Jefferson since 1967, when the Wilmington Medical Center and Jefferson Medical College agreed to provide clinical training for pediatric residents at the Center.

Ali Z. Hameli, M.D., was elected Secretary-Treasurer of the National Association of Medical Examiners at their annual meeting in Chicago in February, 1970. He is also a member of the Board of Directors and Chairman of the Membership and Admissions Committee.

Probable Acute Rheumatic Fever

Patients with suspected acute rheumatic fever have been admitted to the pediatric department of Wilmington hospitals over the past several weeks. This is disturbing because acute rheumatic fever is a preventable disease. Relationship of acute rheumatic fever to a previous group A streptococcal infection has been firmly established. A sore throat must be considered as streptococcal until proved otherwise by throat culture. This applies particularly to young children. It is important to remember that a pharyngitis need not have the appearance of a classical "strep throat" to warrant a throat culture. In many instances a mild sore throat has gone untreated and the child, after a latent period, has come down with classical rheumatic fever.

Throat cultures throughout Delaware are easily available. Mailing kits can be obtained by addressing your inquiry to: Streptococcus Laboratory, Infectious Disease Laboratory, Box 1668, Wilmington, Delaware, 19899 or the State Board of Health Laboratories, State Health Building, Federal & D Streets, Dover, 19901.

Heart Research Applications

Research investigators may now apply to the American Heart Association for support of studies to be conducted during the fiscal year beginning July 1, 1971. September 15, 1970, is the deadline for submitting applications for Established Investigatorships, British-American Research Fellowships and Foreign Visiting Scientist Awards. Applications for Grants-in-Aid are due no later than November 1, 1970.

The Month in Washington

The House Ways and Means Committee has rejected a proposal for inclusion of chiropractic under Medicare. However, a compromise provision would direct the HEW to conduct a "very limited" study of chiropractic under Medicare, utilizing the experiences under Medicaid. A report on the study, including the experience of other programs paying for chiropractors' services would be submitted to the Congress within two years. Chiropractic now is a Medicaid service in 15 states, being authorized for federal funds to the extent that it is legal in the state. Representatives of chiropractors lobbied intensively with committee members for the same treatment under Medicare. The House bill now faces Senate debate.

New 1970 Edition

The Division of Physical Health, Department of Health and Social Services, has recently received a number of copies of the 1970 edition of the American Public Health Association publication, *Control of Communicable Diseases in Man.* This is the eleventh edition of this valuable guide to the diagnosis and management of communicable diseases and will be distributed to all private physicians in Delaware. Accompanying it will be a supply of new notifiable disease cards, reflecting the new reporting system which the Division of Physical Health is adopting effective July 1, 1970. The procedures for filing reports of notifiable diseases are explained in detail on the inside cover of the *Control of Communicable Diseases in Man.*

Caleb Fiske Fund

The Trustees of the Caleb Fiske Fund of the Rhode Island Medical Society announce two subjects for the 1970 essay contest: 1) *The Crisis with Hallucinogenic Drugs — Possible Solutions and* 2) *Human Cell Cultures in the Diagnosis of Disease.* A cash prize of $500 is offered for the best dissertation on either subject. Essays must be submitted by December 15, 1970, typewritten, double-spaced, and not in excess of 10,000 words. For additional information write to the Secretary, Caleb Fiske Fund, Rhode Island Medical Society, 106 Francis Street, Providence, Rhode Island, 02903.

Health Care Administration

The Wharton School's new graduate program in Health Care Administration is conducted by faculty of the Wharton School and the University of Pennsylvania's School of Medicine, with a Master's degree (MBA) being awarded by the Wharton School in business administration. Starting next September, entering students will be able to select a new series of courses which will prepare them for management positions in health organizations, such as hospitals, nursing homes, insurance companies, planning associations, and governmental agencies. Health care administration courses will also be open to professional students in medicine, dentistry, social work and nursing. The new program makes it possible for medical students to earn a combined M.D.-M.B.A. degree in five years.

N.A.R.I. Loan Program

The National Association of Residents and Interns (N.A.R.I.), a 42,000 member organization of medical students, residents, interns and doctors, in practice, released details regarding a new loan program for its members: A qualifying member may borrow up to $3,000 on an extended repayment basis, running as long as five years. These funds may be used for any purpose the young physician sees fit, and no collateral is required. In addition, N.A.R.I. will lend any member, in good standing, $200, interest free, for ninety days. Other N.A.R.I. loan programs provide funds for the purchase of automobiles, $3,000 is available to members in the military, and up to $15,000 can be made available for members establishing their private practice or those entering private practice. Information regarding these programs is available through N.A.R.I. Headquarters, 292 Madison Ave., New York, 10017.

CLINICAL NOTICES AND MEETINGS

Tuberculosis Today The National Communicable Disease Center, Atlanta, Georgia will offer the course, *Tuberculosis Today*, four more times during 1970, these being July 27-31, September 21-25, October 26-30, and December 7-11. Enrollment information and application forms can be obtained from State Health Departments or from the Tuberculosis Branch, National Communicable Disease Center, Atlanta, Georgia.

Biological Systems Seminar A one-week intensive seminar on computer simulation of biological systems will be presented at the EAI Los Angeles Analysis and Computation Center, El Segundo, California, July 27-31, 1970. A $350 fee will include all notes and textual material.

Rehabilitation Disciplines The combined 1970 meetings of the American Academy of Physical Medicine & Rehabilitation and the American Congress of Rehabilitation Medicine, (featuring IF — the Interdisciplinary Forum) will be held August 16-21, 1970 at the New York Hilton, New York City. Address your inquiries to either organization at 30 North Michigan Avenue, Chicago, Illinois, 60602.

Cancer Conference The 24th Annual Rocky Mountain Cancer Conference will be held at the Brown Palace Hotel, Denver, Colorado, July 17-18, 1970. For details write: Rocky Mountain Cancer Conference, 1764 Gilpin Street, Denver, Colorado, 80218.

Flying Physicians Meet The Bayshore Inn, Vancouver, British Columbia, will play host to the 16th annual meeting of the Flying Physicians Association, August 23-28, 1970. It will mark two firsts for the group of flying doctors, their first convention outside the United States, and their first yearly meeting in Canada. Many attending will fly their own aircraft, and tie-down facilities and space will be required for more than 200 aircraft. The program will include lectures on medical subjects, aerospace medicine, general aviation safety, maximum aircraft performance, and other related subjects.

The Flying Physicians Association was started in 1954 by a group of doctors whose chief objective was to organize an association of private pilots dedicated to the promotion of general safety through example and teaching. Its present membership of over 2200 is open to all medical doctors who are members of medical societies approved by the board of directors, and who hold valid pilot certificates. For information about joining, write to: Mr. Albert Carrière, Business Counsel, Flying Physicians Association, 801 Green Bay Road, Lake Bluff, Illinois, 60044.

CLASSIFIED AD SECTION

ANESTHESIOLOGIST: Finishing residency in August, 1970. Sixteen years in General Practice.

CARDIOLOGIST AND INTERNIST: Board-eligible with ECFMG and immigrant visa. Would like full-time position in CCU or ICU or as Internist. Available July 15, 1970.

For further information, contact the Medical Society of Delaware, 1925 Lovering Avenue, Wilmington, 19806. Ph 658-7596.

"Physician wanted" ads will be listed without charge. All others:

Rates: 30 words, set solid. One insertion, $4.00.

Closing Date: Advertisements must be received by mail by the first of the month for inclusion in the current issue.

Terms: All advertisements payable in advance to Delaware Medical Journal, 1925 Lovering Avenue, Wilmington, 19806.

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

LABELING OF PRESCRIPTIONS

The author, a pediatrician in private practice, is in agreement with the AMA Council on Drugs that all medicines should be plainly labeled as to contents. Accordingly, his prescriptions are preprinted with the word "label." Because of this printed instruction it was assumed that pharmacists who filled his prescription would routinely include the name of the medication on the Rx label. Patient feedback indicated that this was not always the case. Accordingly, a copy was made of prescriptions written. Several days later the office assistant phoned the mother and asked her to read the label on the prescribed medicine. The mother's report was then compared with the office copy and differences noted. One hundred consecutive comparisons were made. There was no pre-selection as to type of medicine or type of patient. All mothers contacted had purchased the medicines prescribed. Fifty-three per cent of the prescribed medications were not labeled as to contents as requested.

There was no consistency among the pharmacists in labeling practices. Of 18 pharmacies included in the survey, one large discount market's pharmacy filled 33 of 100 prescriptions. This pharmacy labeled 36 per cent of the prescriptions filled, but 64 per cent of the time chose not to do so. A large chain store filled 16 of the 100 prescriptions and labeled only 38 per cent of the items. A small, locally owned pharmacy filled 5 prescriptions, labeling the contents in only 2 cases. In addition to ignoring the request to labed the contents of the prescription container, the pharmacist failed to accurately transcribe the physician's directions for use in five per cent of cases. The inaccuracies were as follows:

Prescription	*Deleted Phrase*
Penicillin G Syrup 1 tsp. q.i.d. taken ½ h. a.c. and at bedtm. for 7 days	for 7 days
Penicillin G Syrup 1 tsp. q.i.d. taken ½ h. a.c. and at bedtm. for 7 days	q.i.d.
Novahistine Expectorant ½ tsp. q. 4 h. prn cough	prn cough
Racet Cr. Apply to skin t.i.d.	t.i.d.
Vi-Daylin F ½ tab. q.d.	½ tab. q.d.

In many areas it is considered unethical or unwise for the physician to indicate to the patient a preference for a particular pharmacy in which he has confidence. The virtues of freedom of choice are undeniable, but if the above findings are typical, this concept might be legitimately challenged in regard to where the patient has his prescriptions filled.

Cavens TR (3315 Harrison St., Milwaukie, Oregon): *Northwest Med* 69:835, 1969.

KANAMYCIN — Revised Labeling

The Food and Drug Administration has announced new labeling guidelines for oral and parenteral forms of kanamycin sulfate. The following statement will be included in the labeling of parenteral preparations:

"The use of kanamycin sulfate in conjunction with potent diuretics such as ethacrynic acid (particularly when the diuretics are given intravenously) has been reported to cause rapid and irreversible deafness, and should therefore be avoided."

Federal Register 35:397, Jan 10, 1970.

"It is the customary fate of new truths to begin as heresies and to end as superstitions."
Huxley

VOLUNTARY DELAWARE FORMULARY

At its May 14 meeting the Council of the Medical Society of Delaware gave approval to the first group of drugs to be included in the Voluntary Delaware Formulary. A pilot study, lasting one year, will be conducted in cooperation with the Delaware State Dental Society, the Delaware State Osteopathic Society, and the Delaware Pharmaceutical Society. The purpose of the study is to see what can be learned in a year's time about a generic prescribing program, whether it should be enlarged or abandoned.

The listing of drugs in a formulary is designed to allow the patient to receive the least expensive of a variety of chemically equivalent products. The formulary products approved have been selected on the basis of their professionally determined therapeutic efficacy. The manufacturers of the chosen drugs have been approved by the Formulary Advisory Board.

Following is a listing of the seven approved agents:

Non-Proprietary Name	Trade Name	Manufacturer
Ampicillin 250 mg. Caps.	Omnipen®	Wyeth
Chloral Hydrate 500 mg.		Alliance
Meprobamate 400 mg Tabs.	Kesso-Bamate®	McKesson
Penicillin G Buffered Tabs. 200,000 and 400,000 units	Darcil®	Wyeth
Penicillin VK Tabs. 125 and 250 mg.	Ledercillin VK®	Lederle
Prednisone 5 mg. Tabs.		Alliance McKesson
Tetracycline HCl 250 mg. Caps.	Tetrachel®	Rachelle

Physicians desiring to order a drug under the Voluntary Formulary system may do so by writing *formulary* on the regular prescription forms.

The Medical Society of Delaware urges physicians to give wholehearted support to the use of the Voluntary Formulary and to prescribe generically the drugs listed above with the hope of reducing the cost of prescriptions to the public.

THE FORUM

Environment And Health

A NEW METHOD OF EVALUATING RESISTANCE OF BONES

J. L. Nowinski, T.Sci.D.

Strange as it may seem, our knowledge of the human skeleton as a load carrying structure is in a prenatal state as compared with our comprehension of mechanics of technological structures. Despite the profusion of experimental work a quantitative analysis of stress in the human bone is very scarce and mostly old (see, for instance, Gray's Anatomy quoting Koch's fifty-year-old simplified calculations).

Recently at the University of Delaware we have developed a new method of evaluating stresses in bones. It consists in treating the bone exactly as it is, that is, as a viscoelastic porous material composed of a solid skeleton with cavities filled with marrow and various fluids.

Clearly a real bone is a very complex material: nonhomogeneous, anisotropic and with nonlinear response, of both solid and fluid phase, to the external forces. In the present stage of our analysis some natural simplifications were made, such as statistically uniform porosity, Newtonian (linear) behavior of liquid phase and (linear) Hooke's constitutive equation of the skeleton. The viscoelastic properties of the bone model so adopted show the same pattern as those of the so-called standard viscoelastic model (composed of two springs, one parallel with a dashpot and one in series). Such a model under a sudden application of constant load displays an instantaneous deformation and then a bounded creep. Under a sudden application of a constant deformation, on the other hand, there originates an instantaneous stress which decays slightly with time (so-called relaxation).

It is most remarkable that the described theoretical behavior of the osseous material agrees fully with the results of experiments obtained for example by Sedlin in Sweden. Similar results were obtained in our laboratory in the department of mechanical and aerospace engineering.

It is worth noticing that a close agreement was found also between the theoretical wave velocity and the laboratory data (McElhaney in USA).

Professor Nowinski is with the Mechanical and Aerospace Engineering Department, University of Delaware.

This page is sponsored by the Delaware Tuberculosis and Health Society.

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PEDIATRIC IMMUNIZATION AS A DEVELOPING MIRROR OF NATURE

Joseph Stokes, Jr., M.D.

The following three papers were read at the first Annual R.O.Y. Warren Memorial Lectureship, held at the Academy of Medicine, Wilmington, in December, 1969, commemorating the career of Dr. Warren in the field of pediatrics. They are distinguished in content, featuring the more subtle sidelights of the relationship of the child to his environment and the signposts of his early, crucial development. We publish them in the form of a symposium as a fitting tribute to his memory.

It can be said with but little exaggeration that pediatrics or the promoting of child health and preventive medicine may be considered as almost synonymous.

The bending of the twig is almost too late to be of value for the world's problems. All of the work on infants and young children indicates that it is not the bent twig that is so important as are the seeds and the early sprouting. It was in this area that Robert Warren placed his most intense interest and effort. As a result of this interest, particularly in the promotion of mental health in the earliest years and in the prevention of severe psychological problems in early childhood, he became the actual founder of the Child Guidance Clinic in Wilmington. He will be remembered particularly for his guiding hand in all that was related to the field of child health in the Wilmington area.

It is a great pleasure thus to memorialize Robert O. Y. Warren in a symposium that fits his interest in prevention in the field of pediatrics. It is also a particular pleasure to know that Mrs. Warren is present to share in this symposium and to know that his son, Dr. Stuart Warren, is pursuing in his father's footsteps the type of work that Dr. Robert Warren so ably initiated.

In speaking of children as arrows Kahlil Gibran has said,

> *"You are the bows from which your children as living arrows are sent forth.*
>
> *The archer sees the mark upon the path of the infinite;*
> *and He bends you with His might that His arrows may go swift and far.*
>
> *For even as He loves the arrow that flies, so*
>
> *He loves also the bow that is stable."*

Man has been permitted an increasingly greater control over the release and direction of the arrows. It is in mitigation of the excesses of nature and the promotion of the proper directions of the arrows that the pediatrician can make his greatest contribution. It is also

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in the stabilization of the bow, with adequate support and education in health of the parents from the time of conception through infancy, childhood and the early adolescent years, that the pediatrician can make a profoundly important contribution to community health.

Prevention and Treatment Contrast

Two rather recent events occurring at about the same time, one in South Africa and the other in West Africa, provide a startling contrast between prevention and treatment, and particularly between the attitudes of the public regarding prevention and treatment. The first was the "technologic trick," not supported by adequate immunologic knowledge, of transplanting a young woman's heart to an aging patient with a crippled heart in South Africa at the cost of approximately 30 physicians' time and enormous expense, and followed by a relatively rapid deterioration of the young heart and death of the older patient. The second event was the saving by World Health Organization estimate of approximately 600,000 to 700,000 lives of children in West Africa by means of attenuated measles virus vaccine because measles is a universal disease of children, resulting ordinarily in a fatality rate of 25% in that geographic area with its low protein diets. All communication media in the world, and particularly in the West, were clogged with the adulatory reports of the unfortunate "trick" operation, while the hundreds of thousands of children saved from death by measles vaccine remained practically unheeded. Both of these events were new procedures and should have been at least equally newsworthy, but the usual lack of public interest in preventive measures was strikingly reflected in the difference in news coverage, despite the almost certain death in the first event and the almost certain saving of hundreds of thousands of lives in the second event.

In the area of immunization against infectious diseases of viral origin medical science over the years has been turning particularly to those viruses which usually produce permanent or semi-permanent immunity. The development of such immunity has been by means of mutant or attenuated viruses producing mild diseases that imitate nature or produce a mirror image of nature.

At the end of the 18th century before viruses were discovered, Jenner demonstrated that small-pox would not attack milkmaids who had suffered the skin lesions of cow-pox. Thus for the first time a mild virus infection was shown to control a far more severe viral infection even though the common antigenic components were not then understood. Although a permanent immunity is not usually produced by this method, repeated vaccination at long intervals (6-9 years) assures continued control of the severe disease. Today attenuated chick tissue culture vaccinia virus bids fair to replace the cruder calf lymph virus vaccine, which since Jenner's discovery has saved millions of persons from death and disfigurement.

Later Pasteur, also before the discovery of viruses, studied in rabies the protective effect of vaccination with dried spinal cords of rabies-infected rabbits against rabies in dogs. This study also represented an effort to mimic nature, and in recent years the crude vaccines against rabies are being replaced by avianized attenuated rabies virus vaccine that is highly protective even in the absence of multiple doses.

Yellow Fever Mutant Strain

Following the discovery of viruses and later their ability to grow in the chick embryo and its membranes as a means of attenuation, Theiler discovered a mutant strain (17D) of yellow fever virus that has remained stable and highly effective in producing a permanent immunity to yellow fever in man. This attenuated live virus vaccine also has been responsible for saving the lives of hundreds of thousands of persons in the tropical areas of South and Central America and of Africa.

The first application of tissue culture techniques, originated by Harrison, was made by Enders, Weller, and Robbins in growing and attenuating polio viruses Types I, II & III so that they could be used, first by Koprowski and Cox and then by Sabin, as live oral vaccines. These have not only produced adequate antibody titers in children, but also have immunized the intestinal tract against heavy reinfection with the polio viruses. The dead virus vaccines used by Salk when adequately produced have appeared to be equally protective, but have required repeated injections for maintenance of immunity. This repetition apparently has not been required for the live attenuated virus vaccines, which again have served as a mirror image of the natural disease and have saved countless children from death and severe paralysis.

Measles, Mumps, Rubella

The viral diseases with which our group at the University of Pennsylvania-Children's Hospital and the Merck Institute for Therapeutic Research has been more actively concerned in studies on immunization are measles, mumps, and rubella. All of the viruses of these diseases have been appropriately attenuated.

Attenuated measles virus, as the Edmonston strain of Enders and Peebles, was first modified in its reactions by the simultaneous injection of immune human globulin in the opposite arm, and later was more appropriately modified by low temperature passage in chick tissue culture cells, as demonstrated by the Schwarz and Moraten (more attenuated Enders) strains of virus. These last strains cause but slight febrile response and rarely any other symptoms such as rash, cough, etc. Their seroconversion rates have been at least 90%, and the persistence of immunity has markedly reduced the incidence of the natural disease in the United States as a whole, despite the fact that only a little over one-half of the child population has received the vaccine. Epidemics of measles are now appearing only in those areas that have received but little of the vaccine.

Attenuated mumps virus vaccine was first tested quite successfully by our group at the Children's Hospital of Philadelphia by the respiratory route, the natural route of infection. This route is wasteful of material and difficult to quantitate. Later with chick tissue culture late passage virus (25th), Smorodintsev et al in the USSR vaccinated parenterally and with considerable success, although with a diminishing immunity with succeeding years. Our joint group (University of Pennsylvania-Children's Hospital-Merck Institute for Therapeutic Research) found that the 12th passage on chick tissue culture produced mild symptoms of mumps in susceptible children, while at the seventeenth passage the injection of virus produced neither local nor general reactions but an excellent continuing level of neutralizing antibodies, as well as a continuing immunity that has now persisted for over four years.

Rubella virus, first grown in tissue culture by Weller and Neva and by Parkman, Buescher, and Artenstein, has been studied in a variety of tissue culture cells by a number of workers, ie, grivet monkey kidney, dog kidney, rabbit kidney, human embryo cells, and duck embryo cells. Our joint group has emphasized the duck cells as a medium for attenuation because, of all these cells of animals, the duck's are the farthest removed phylogenetically from man and thus are less likely to harbor infectious agents pathogenic for man. This lack of danger is also supported by the fact that, in contrast to the other animals named, man and duck have no known clinical diseases in common, and in addition the Pekin ducks used are not tumor bearing. A variety of passages on duck tissue cultures has been studied, and the present vaccine licensed for use has been the HPV77 (high passage virus originally in grivet monkey kidney — 77 passages) of Parkman and Meyer, with five later passages on duck cells. The duck cells apparently permit an appropriate attenuation which produces no arthritis or arthralgia in susceptible children under 12 years and yet which produces an excellent sero conversion. An occasional vaccinee has mild symptoms of rubella, but rarely with fever. Transient arthritis and arthralgia occur at a low rate, starting with susceptible females at puberty and increasing slowly in incidence with increasing age to a rate of 30-40% at 40-45 years of age. The dog kidney vaccine has shown an incidence of arthritis and arthralgia of about 2% in susceptible children under 12 years and a considerably higher rate after 12 years.

It would appear that rubella vaccine as well as the attenuated vaccines for measles and mumps will permit anamnestic responses without symptoms in vaccinees where they are exposed later to the natural viruses; also in the occasional persons who fail to respond to the originally injected vaccine, the natural disease may well occur. No vaccine can be 100% effective, and it remains to be seen whether, as in small-pox, revaccination may be needed. Once a person is sensitized to these viruses, the revaccination should not produce untoward reactions. The present evidence of continuing levels of antibodies, paralleling those of the natural diseases, although lower, suggests that the great majority of persons vaccinated with the attenuated virus vaccines to measles, mumps, and rubella will maintain their immune states.

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INTERNAL SECRETIONS as Related to the Environment in the Development of the Infant and Child

Alfred M. Bongiovanni, M.D.

Presenting the second of the R.O.Y. Warren Lectures held at the Academy of Medicine, December, 1969.

Dr. Robert Warren was a very much respected member of the Department of Pediatrics of the University of Pennsylvania. He brought to rounds and to his teaching a special personal elegance, equanimity and a knowledge of the community. He had many interests, but in accordance with our theme today and with my own interests I should like to dwell briefly on the relationships between the environment and internal secretions.

It is somewhat embarrassing to realize that human medicine has only recently taken up these questions whereas those engaged in animal husbandry have appreciated these factors for a long, long time. In 1835 Jesse noted that if an observer continually depleted the nest of a long-tailed tit, this species laid 30 eggs in very rapid succession, and that the lark, which ordinarily lays five eggs at a nesting, will lay continuously if only one or two eggs are allowed to remain.

Dairy farmers have realized for many decades that contented cows yield more milk. It is not only the sensory stimulus of suckling that plays a role, but there are many other factors as well. Some cows are easier to milk in the presence of their calves, and environmental disturbances lead to inhibition of the release of milk and of reproduction. Many species will not ovulate spontaneously in captivity however congenial the keeper may imagine his artificial environment.

Much of the earlier investigation of the efforts of environment pertains to the role of light, and there is a large literature on this point. There is a cooperation among the organs of sense, the central nervous system and the endocrine glands. The starling demonstrates increased testicular activity upon increased exposure to light, and this has been found in other birds as well. Increased illumination will also accelerate reproduction in the ferret during those seasons when it does not normally mate. This is clearly related to the enhancement of the otherwise dormant sex glands.

Psychological stimuli are indeed very important in arousing sexual activity of the endocrine glands, and this may be true in man of whom Shakespeare said, *"Love looks not with the eyes but with the mind."* An isolated female pigeon does not ovulate, but when

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two females are kept together they may both begin to lay eggs.

Changes in external temperature have also been well studied, but there are great discrepancies with respect to heat and cold among the different species, as John Hunter noted in 1786.

Within very recent years we have learned much about the relationships between the central nervous system and the glands of internal secretion. While the pituitary gland remains for the most part the master gland which stimulates the other organs of internal secretion, the pituitary itself is guided by special centers within the hypothalamus of the central nervous system. One by one several neurosecretory substances which originate in the hypothalamus and reach the pituitary have been isolated and identified. The hypothalamic nervous centers have numerous afferent pathways which carry messages from the environment. Thus the central nervous system is sensitive to changes both within and without the body which lead to modulation of hormone production.

According to Christian and others, the overcrowding of animals leads to diminished reproduction regardless of the provision of adequate food. While racial factors have often been invoked in considering sexual maturation, once more it appears that the environment may be more important. Japanese girls born and reared in California sexually mature earlier than Japanese girls reared in Japan. While we do not understand as yet the influence of childrearing practices on the rate of maturation in the human, it is known that in the rat the handling of young females leads to earlier sexual development.

There is currently a great interest in the question of nutrition, not only its effect on the rate of physical development, which in turn is under hormonal control, but also on the development of normal intelligence. Perhaps the major problem which accounts for poor physical growth and subnormal intelligence in the world today is poor nutrition. While it is obvious that fuel is a basic necessity for growth and development, it may be less well known that poor nutrition also affects the endocrine system, which is responsible to a degree for the growth and development of the body.

Under some special circumstances it appears that despite adequate nutrition, the infant raised in an unfavorable environment (sometimes called the maternal deprivation syndrome) does not grow as well. And there is some early evidence, which is not yet universally accepted, that an unfavorable environment leads to the diminished secretion of growth hormone.

There have been many studies in man indicating that stressful situations lead to an increased secretion of steroid hormones by the adrenal. Large amounts of these steroid hormones, when given for some disease process, interfere with normal growth. Whether or not this is an item of importance in regulating human growth is currently unknown; studies of the type desired are necessarily limited in man. There is apparently in man as in other primates, a wide variety of alterations in the secretion of several hormones by certain stressful situations. The pieces are still being put together, and in the coming years we should learn more about the details.

But there is enough at hand to urge us to provide all children everywhere with adequate food, a happy environment, and good medical care as exemplified in the life of Dr. Robert O. Y. Warren.

* * *

> "Medicine is as old as the human race, as old as the necessity for the removal of disease."
> *Haeser*

CHILD DEVELOPMENT AND PEDIATRIC OFFICE PRACTICE

Henry S. Cecil, M.D.

Presenting the third lecture in the R.O.Y. Warren Memorial Lectureship held at the Academy of Medicine, December, 1969.

It is a great privilege to participate in this symposium honoring the memory of Dr. Robert Warren. My association with Dr. Warren grew out of his interest in child development. In the early 1960's he attended a seminar at Children's Hospital on the Emotional Aspects of Pediatric Practice, a seminar of which I happened to be one of the leaders. Dr. Warren had joined the group because he wished to improve his knowledge about the psychological development of children and the impact of illness on the child and his family. He said at the time that his years of pediatric office practice had convinced him that these areas of his concern were important to the pediatrician because they offered a great opportunity for practicing preventive mental health if the pediatrician could become more skilled in parent counseling.

I recall that Dr. Warren would bring to the seminar examples of problems seen almost daily in his office. Some were young infants with physiological complaints. Others were pre-school children with problems of hyperactivity or habit training. Some were school-aged children with learning difficulties, and others were adolescents with physical or behavioral complaints. Many were sick children in whom the impact of the illness had so affected the family interaction that he thought the child's future development was in jeopardy. Often, Dr. Warren brought tape-recorded interviews with the parents of some of these children, and many of his cases were used for discussion by the group.

Later he joined a smaller group and studied interviewing and child development in a more intensive way, and after his experience in the seminars in Philadelphia, he helped to organize a similar group in Wilmington for practicing physicians. Later on he introduced psychosocial training into the resident program in Wilmington.

Bob Warren's interest in the psychological and social aspects of pediatrics certainly highlights an issue that remains relevant for pediatric practice and training programs. The kinds of problems he saw in his practice continue to confront the practitioner today. Most available evidence indicates that these problems are on the increase and that they will make up an ever greater proportion of the types of problems in office practice.

It is to this aspect of Dr. Warren's interests, namely, the management of development problems in the office, that I address myself today. In particular, I would like to focus on such problems arising in the first two years of life. This is the period when parents naturally bring their infants to the pediatrician with their concerns about physical growth, child care and infant feeding. Inevitably these concerns are accompanied by behavioral complaints and by questions about childrearing and child development. So, like it or not, the very nature of early infant health care forces the pediatrician to carry responsibilities for the child's psychologic development. But it is because of the fact that he is involved with developmental issues so early in the child's life that the pediatrician has his unique op-

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portunity to practice preventive mental health.

If we are correct in thinking that early childhood experiences are critical determinants of later adult performance, then infancy is a time when "an ounce of prevention may be worth a pound" of later intervention. I purposely used the word "if" because, as you well know, we do not at this stage of our knowledge have hard evidence that early developmental problems do, in fact, lead to later adult disorder. Most of the evidence that this association holds is from retrospective studies and there is a great need for prospective validation of these findings. But, as Eisenberg has pointed out so well, we do not need to wait until all the evidence is in before we apply what we know, for there are ample humane reasons to intervene in behavioral or developmental difficulties in childhood. Such behavior is distressing to parents. It is a nuisance to other people. It therefore increases the stress of the child's life and ultimately becomes a nuisance to the child himself, interfering with his performance and social relationships. As someone has pointed out, there is far more human misery from aberrant human behavior and from fear of disease than there is from disease itself. The physician's primary mission has always been to relieve pain and distress, and for these reasons alone, behavioral and developmental difficulties of children demand his attention.

I would now like to outline some of the developmental problems occurring in young infants and present some concepts which the physician must have if he is to understand these problems and develop approaches to their management in the office.

I will divide the infancy period into the young infant (birth to nine months) and the older infant (nine months to two years) because the care and development of the young infant is different from that of the older one. Nine months was chosen as the dividing point because this is roughly when locomotion begins. Crawling or walking marks the beginning of much more complex behavior in the infant and a different order of parental supervision is required.

Physiologic Disturbances in the First Year of Life

Strictly speaking, the very young infant has no psychological problems. He generally responds to stress by alterations in his neuromuscular activity, his tone or by physiologic symptoms.

I have listed in Figure 1 some of the common physiological responses and disturbances seen in young infants.

FIGURE 1
Disturbances of Physiological Functioning of the First Year

Infant
- Excessive crying
- Sleep disturbances
- Gastrointestinal problems of poor intake, regurgitation and vomiting, excessive stooling and constipation
- Excessive irritability
- Hypertonicity
- Difficulty in comforting

To me this represents a fascinating group of problems of the infancy period. On physical examination these infants are usually healthy; they fall within the norms of their growth grid, and their developmental milestones are usually on time. On closer examination, however, they show subtle signs, such as, they are not relaxed when held, or they do not have regular periods of attention alternating with activity, a pattern of behavior important for integrated development; and from Provence's[1] observation they are not well modulated or smooth in their motor activity. These infants have interesting families. Often they are first children of a new mother. Sometimes they are the first born of a new marriage. Sometimes they are "last children" or menopausal children with their next older sib being ten or more years older. On the other hand, they may have a sibling only ten months older, or several siblings, the next older being ten months, and all a year or less apart.

I think the fact that these patterns of family makeup are so frequently found in this group has great significance in the etiology of the difficulties in these infants. The time of their arrival in the family and their place in the family have added to the mother's stress or presented the mother with an adaptive task beyond her capacity. The stress may be for any one of the following reasons: the mother may be inexperienced, as in the case of a first baby; there may be overwhelming demands on the mother, as with children too close together; or it may be that she is overstressed because she has finished her childrearing, may have other goals and is unable to adapt to the care of infants, a pattern often occurring with the menopausal baby. It may be because the stake she has in becoming a successful mother is so high that her performance is adversely affected as with the first baby or with the first baby of the second marriage.

In the background of these infants, there is often a history of pregnancy or delivery complications. Often one observes that even though these complications have not in fact damaged the infant, the mother feels that her child is somehow defective as a consequence of the complication and will, therefore, never develop normally. In such circumstances of childrearing the child often begins to show symptoms which fulfill the mother's prophecy. This type of situation, incidentally, is far more prevalent than we were formerly aware.[2]

This group of infants is fascinating for other reasons too. They have a tremendous impact on office practice. They make up a large percentage of the complaints seen in office practice among infants. While they pay for the bread and butter of the pediatrician, they can be a source of great frustration. The mothers of these infants are often demanding, they call frequently, they usurp the telephone hour, they often bring to the office a list of twelve complaints and some of them keep daily logs of their babies' activity which they tediously repeat to their doctor. But worst of all they will not take the doctor's advice and are very sensitive to the slightest inference that the trouble lies with them and not with their infants.

In an effort to alleviate the mother's concern, these problems are commonly treated with sedatives and frequently formula changes. They are often tagged with a diagnosis of allergy with no evidence to support this diagnosis and are treated with milk substitutes often to no avail. When these measures fail, the physician ultimately becomes anxious and finally angry at the mother.

It is the impact of this group that makes young physicians fresh in practice say in desperation, "What in the world have I gotten myself into?" (In many ways academic pediatrics owes a great debt to these infants because they have provided the motivation for so many pediatricians to subspecialize in esoteric fields.)

But on the positive side of the ledger this group of infants is fascinating because they will frequently respond to pediatric intervention. Many practitioners learn to manage these cases soundly through experience despite the fact that their residency training was woefully lacking in teaching them how to approach the medical care of these problems.

Now the key to the diagnosis and management of this group lies in an examination of the mother's caretaking behavior and attitudes and her reaction to the baby's temperamental patterns. Common patterns of maternal behavior are shown in Figure 2.

FIGURE 2
Disturbances of Physiological Functioning of the First Year

Maternal Behavior
- Over- or under-responds to her baby
- Immature or inappropriate in her understanding of her baby's needs and her expectations of him

Maternal Attitudes
- Indifference to baby
- Ambivalence towards baby and its needs
- Self-doubt and anxiety
- Intolerance of baby's characteristics
- Unawareness of the baby's primary response pattern
- Dissatisfaction with role of motherhood

Mothers with this syndrome are often called "anxious mothers," and they may well be tagged as neurotic. But as I have indicated earlier, there may be current stresses that are causing such mothers to be unable to perform their task in a satisfactory manner, and one should not be too hasty in labeling them as neurotic. Under stress everyone, neurotic or not, will show signs of anxiety and poor performance.

Deprivation Syndromes

There is a second group of disturbances in young infants that is more difficult to manage. Figure 3 shows some of the deprivation syndromes of the first year of life. The chief way these infants differ from the first group is that they are unresponsive socially and usually show developmental arrest. The patients in this group represent more severe pathology. They are frequently from deprived populations and are probably most often seen in urban hospital practice. Figure 4 lists the predominant maternal behaviors and attitudes that accompany deprivation syndromes in the first year. The mothers in this group are withdrawn from the care of the child rather than being actively involved as in the group with physiologic disturbances, and it is in this group that we find such an alarming incidence of battered children.

There is a third group of disturbances in early infancy requiring pediatric intervention. These are the deviations that accompany the care of the sick child, deviations secondary to infections, metabolic diseases, prematurity and congenital defect. The symptoms in these instances may be either those of over-stimulation or deprivation. The medical illness is a great factor in stressing the mother-child interaction and producing the symptoms in the child.

FIGURE 3

Deprivation Syndromes of First Year

Infant

- Developmental arrest
- Unresponsiveness
- Lethargy or apathy
- Marasmus
- Monotonous movements
- Infantile autism

FIGURE 4

Deprivation Syndromes of First Year

Maternal Behavior

- Alienation from baby
- Complete inability to function in maternal role
- Severe clashes with baby
- Venting life dissatisfaction on baby
- Denying or trying to control baby's needs

Maternal Attitudes

- Severe depression
- Excessive guilt
- Overwhelming and incapacitating anxiety

Prematurity is a special situation that needs attention in follow-up care. Over-protection is frequently evident in the precautions that mothers take to avoid contagion. We have seen cases in which the baby's room at home has not been entered except with masks, and all aseptic precautions were taken over a prolonged period of time. Strangers were not allowed in the house. Socialization was decreased, and the mother became isolated in her behavior. The infant develops symptoms of withdrawal. If the mother, however, is inappropriately active in care, over-stimulation develops.

As we look at the disturbances of the older infant (Figure 5), we see a new type of behavior entering: oppositional or negative behavior and so called self-comforting behavior. I have not outlined here the maternal behaviors or attitudes. They are similar to those in the previous groups. The important point is that these conditions often reflect, as in the previous ones, problems in the mother-child interaction.

The Developmental History

The principal diagnostic tool available to the physician in the management of disturbances in children is the history. Histories are not solely for the purpose of obtaining relevant facts which will lead to diagnosis and from there to treatment. History taking must encompass the skill of helping the family to face and evaluate past events that they would prefer to forget, and it should lead to a formulation of the pressing issues which they would prefer to avoid. Now in this view the history

FIGURE 5

Disturbances 9 to 18 Months

Infant
- Excessive negativism (temper tantrums)
- Finicky eating
- Rocking
- Head banging
- Breathholding
- Pica
- Hair pulling
- Failure to develop speech
- Inability to play

is a joint effort between the family and the physician, which should lead not only the physician but also the family to some evaluation of the issues for action which they both face. Frequently the pediatrician is asked some questions just as the mother is leaving after a well-baby visit or after a house call. "By the way, doctor, Johnny wets the bed," or "Susan won't eat; I think she needs a tonic." These are times to avoid a quick answer and to ask the mother to come in for another appointment and sit down so that her problem can be evaluated. If the physician is convinced of the necessity for taking adequate time for the history and for discussion, the family will usually take no exception to an increased fee if the matter is explained in advance. It is not uncommon to find that both parents wish to be included in this process. As a usual practice, it is well to know how they feel about this beforehand. If possible, both parents should be seen for a short time together and then a major effort made with the mother. It is well to start with the assumption that a child's symptoms are quite disturbing though the degree of disturbance may be minimized or denied by one parent or the other. Differences between parents in the expressed annoyance are important in the outcome of the case. Usually no definitive help can be given by the pediatrician to a child living at home when the parents are widely split either about what bothers them or what they expect of the child. In any event it is well to start an interview by conveying the understanding that any behavior disturbance and/or biologic dysfunction in the child is experienced as burdensome and in various ways a problem of guilt and recrimination to the parents. Now with this established it is possible to pursue more extensively the different areas of the history.

The limits of time do not permit an extensive discussion of the history. I would like, however, to cover a few of the major points that I think need to be considered. It should begin at conception, include the prenatal history, birth, neonatal period, feeding and intervals of child development. In the history of the onset of the pregnancy one is interested in the more subtle aspects of mixed feeling about it rather than simply whether the pregnancy was wanted or unwanted. Attitudes of burden may be conveyed by the mother's response to symptoms during the pregnancy. Excessive vomiting, constant headache and discomfort and fears, while often related to primary organic problems, convey a sense of burden and threat experienced by the mother. Fears about damage to the child as a consequence of these mother's symptoms or illness during pregnancy, as I mentioned earlier, are often important guides to later perception of defect in a seemingly well child. Green and Solnit[2] termed this the vulnerable child syndrome.

Now it will be seen by this time that facts, if obtainable, are important. Often more important is the perception of the mother of the values of reward, punishment, pleasure, success, or failure that were attached to her experiences during her child's development. It is for this reason that evaluation of problems in the first two years is often best made by taking a twenty-four-hour day history in terms of the mother's view at various times during the day.

The classical developmental history was chiefly related to a child's motor development. We are indeed interested in any unusual aspect of motor development. But we are also interested in obtaining some information about the child's primary reactive patterns. The recent work of Chess and Birch,[3] "Patterns of Primary Reactive Behavior in Infants," has shed some useful light on the way that infants differ. They have demonstrated that under normal conditions an infant tends to become stabilized in his reaction patterns and that these continue to be constant features of his behavior. The nine areas of behavior that they examined were activity, intensity of response, attention span and persistence, distractibility, approach, withdrawal, prevalent moods, sensitivity of threshold, rhythmicity of function and adaptability. There are some children who are more active than others, who will approach situations, who are intense reactors. Obviously they are harder to manage and require more of their mother. There are some who are adaptable and some not so adaptable.

Caretaking Requirements

The important aspect of these behavioral traits is that they determine the nature of the caretaking requirements of the infant. They are the guidelines by which the mother stimulates the baby. They should determine the timing and manner in which she teaches the baby and disciplines him. In other words she needs to adapt her caretaking to these characteristics. There are some babies who are difficult at best. This is important for a mother to know.

The second important part of the history is the family history. This not only should include the past medical history, but it should include the mother's previous experience with other children. Frequently it is possible to see that each child has a particular emotional value and is born at a particular point of parental experience that later has importance for childrearing.

Since we are trying to deal with emotional development or a problem in the child, we would like to know the qualities of the emotional climate of the families that the mother and father came from. Family attitudes about success, failure, discipline and pleasure enter into the creation of parental roles. We are interested in the mother's ideas as to whether she was treated warmly by her own mother or whether there was much unresolved conflict in the relationship. We are interested in the mother's relation to her siblings and where she developed her ideas about infant care. In a general sense we are less interested in general life conflicts than in those having a bearing on the specific parental role. In the marital history, for instance, the dependency aspect of the relationship is very important. The patterns of mutual support between marital partners often point to weak spots in the stress handling ability of a family. The disappointed expectations of parents in each other are often a major cause of hostility about particular character traits in a child.

Assuming that no emergency physical illness exists in the child, the parent-interviewing should lead to effective planning for the child. Properly conducted interviewing should bring the physician to the point of mutual decision with the family as to whether the child is improving or becoming more disturbed. If this is difficult to distinguish, then an evaluation period of three months observing for evidence of change leading to decision is an effective strategy. In the infancy period, of course, a much shorter time is indicated. Often one can observe in office practice that the interview, as I have outlined, serves as a focus around which the family arrives spontaneously at new ways of handling an old problem. Frequently the effect of the interview is so supportive that serious parental fears are handled and there is general improvement in the child. In a percentage of the cases it will be necessary to refer to a children's psychiatric service of an appropriate type.

Now a word about the needs and problems of the physician. In pediatric practice today the problems are in general more demanding in terms of time and patience, and the manpower shortage has increased the demands on the practitioner. The physician who is working under such heavy pressure finds it difficult to avoid reactions of irritation to seemingly irrational parental attitudes. Many times young physicians beginning in practice offer time and interest to families and find themselves heavily burdened by these expectations as their practice grows. It is almost impossible to approach diagnosis and management of psychological problems of childhood without consideration of the added time necessary and the added intrinsic human involvement required. This is all the more difficult when the busy practitioner is assailed by feelings of guilt for insufficient investment of time with his wife and children. Beyond this every physician is subject to certain personal, biased opinions and areas of intolerance. Today's young people call them "hang-ups." All too frequently practitioners find themselves hung up in case management as a result of strong feelings towards either deprivation or spoiling a child; they might also disapprove of a particular way of life manifested by a family. Now the practical impact of these reactions of irritable or critical nature is that they tend to interfere with the physician's ability to make the necessary steps in taking a sound history and making a balanced appraisal of the situation. There is no question that the physician must organize his practice in such a way that he can lessen the time pressures on him so that he can deal with these problems. It has been the experience of many who have done this that in the long run they save time and find their practices more rewarding.

In summary it may be said that the ability to intervene meaningfully in the disorders of childhood arises out of a good relationship with the family and then a respectful nondeceptive relationship with the child. Skill in history taking is an absolute necessity in this process. If the physician can manage his personal problems of time availability and emotional bias, he is then in a position to make a better diagnosis and to intervene meaningfully. It may be discovered that support to the family will be enough to start things going well. The wise physician must evaluate the direction of family integration and use his influence to refer, if necessary, before disorders become fixed and chronic.

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Letters to the Editor

To the Editor:

One of the questions frequently asked physicians is the present recommended routine immunizations for adults residing in the United States. These recommendations are currently as follows:

Tetanus or Tetanus Diphtheria Toxoid with booster every 10 years or after one year following injury.
Influenza Vaccine for the elderly or anyone suffering from a chronic disease, with an annual booster.
Measles Vaccine for any susceptible adult.
Mumps Vaccine for susceptible adults, especially males.
Poliomyelitis Vaccine for adults at increased risk with contact of a known case or travel to areas where polio is endemic or epidemic.
Rubella Vaccine for susceptible women of child-bearing age, providing steps are taken to prevent pregnancy for two months.
Smallpox Vaccine for those at risk such as medical, hospital or allied health personnel. Of course, were a smallpox case to be introduced in our area, persons at risk also should be vaccinated.
Rabies Prophylaxis for persons at risk such as veterinarians, dog and game wardens, or individuals working with animals in kennels or zoos.

Immunization recommendations and requirements for foreign travel vary with the particular area. Current information can be secured by contacting your local health unit. A smallpox vaccination is usually required within three (3) years for re-entry into the U.S. after a visit to most foreign countries.

E. F. Gliwa, M.D.
Deputy Health Officer
State Board of Health

COMMENTS* Governor Russell W. Peterson

• Government is playing an increasing role in the provision of medical services today. The State Government, like the practitioner, is interested in the highest quality of patient care in the most economical way possible.

A good hospital is a great asset to a community. Recently the burden placed on hospitals has been increased by a number of factors. For instance, medical service has come to be thought of as a "right," regardless of ability to pay. This right carries with it an obligation for the entire community to join in financial support of our hospitals.

In Delaware, this community obligation is being met in part by the state government. This year we are paying $628,000 towards the care of indigent patients. This money was formerly paid by the counties, but the state has taken over the obligation. In the budget proposed for next year, the state would nearly double that payment to $1.15 million. That's far from the approximately $4 million the Delaware hospitals requested, but it is still a healthy increase over the current year. The proposed budget also includes $900,000 for the Medical Institute, and $2 million to provide hospital insurance for all state employees. So in fiscal 1971 $3.5 million additional state funds are budgeted for hospital and medical services. When added to what we are spending for . . . Medicaid and for direct aid to hospitals this year, our total state bill for 1971 will be $6.4 million, a 125% increase in one year.

As you well know, for years the medical profession resisted government involvement. But today there is a general recognition that government and public funds must both play a role in the provision of medical services. And with that role comes a responsibility for government to become more concerned and involved in the operation of our hospitals.

The management of Delaware's private hospitals goes to the Governor for financial help, the practicing physicians tell him they need a stronger voice in developing more effective and less costly ways of delivering their services, and John Q. Citizen calls for better health care and lower costs.

Over the months, many people have expressed to me their serious concerns about problems in the delivery of health care to the citizens of our state. The concerns focus on three basic areas: patient care, medical manpower, and costs. The problem is so important to so many people that the Governor's office must get involved. The obvious goals must be to produce the highest quality of patient care in the most economical way possible.

The medical manpower supply is critical. The new Medical Institute will help, but that's going to take time and certainly will not solve the entire problem. In three years, the total number of physicians in Delaware increased from 602 to 635, while in New Castle County the number rose from 495 to 520.

A wider development of training programs for all types of para-medical personnel should help provide patient care more efficiently and economically, while at the same time relieving some of the professional manpower shortage.

More innovation is needed if we are to fully utilize the physicians we have. Up to now, the trend has been to encourage patients to use hospital facilities. Yet the cost of a "clinic" visit at the Wilmington Medical Center last year was $13.09, which does not include a doctor's fee, but a physician can deliver the same service in his own office for $6 or $7. Should we be encouraging use of neighborhood centers or the doctors' offices to save money?

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* These remarks have been abstracted from Governor Peterson's address to the biennial research meeting of the Wilmington Medical Center in February, 1970.

Soaring hospital costs are a nation-wide problem. Robert H. Finch, former Secretary of the Department of Health, Education and Welfare, has said, "This nation is faced with a breakdown in the delivery of health care unless immediate concerted action is taken by government and the private sector."

I am convinced that Delaware, which has what it takes to become a model state, can also lead the way in finding solutions to this critical problem. My office is anxious and willing to work with you toward that goal.

The matter of rising hospital costs is acute not only in Delaware but throughout the country. Recently *Fortune* reported that medical care costs are rising twice as fast as the cost-of-living index, and that a main factor is the "archaic manner in which medical care is arranged and paid for." This magazine also reported that the national average cost per patient day in general hospitals jumped from $48.15 in 1966 to $67.60 in 1969, with the main cause attributed to wage increases.

In Delaware, the per-diem charges at the Wilmington Medical Center are the highest of all hospitals in the state, and higher than many in adjoining states. The Center's daily charge last year was about $89, a $12 increase over 1968. By comparison, Kent General and St. Francis each were $81 last year, Milford Memorial was at $75, Nanticoke Memorial at $71, Beebe Hospital $67.

The state is planning on developing community health centers which should definitely have an impact on the medical center's operations.

How do our state institutions compare? In fiscal 1969, Delaware State Hospital's per patient day charge was $14.48. It was $13.51 at the Hospital for the Mentally Retarded at Stockley, and $31.69 at Emily Bissell. Of course, a walk through our state hospitals and then through the Wilmington Medical Center will demonstrate a tremendous difference in the quality of service. There is no doubt that the state has not put up the money to provide the same quality of service at our state institutions as the service provided at the private hospitals. I have been concerned about why over the years we have developed these two different routes: that when one of us has a heart attack he goes to the Wilmington Medical Center and gets one quality of service, but if one has a mental disorder he goes to Farnhurst and gets a quite different quality of service. In my opinion, the state hasn't begun to provide the service in the state hospitals that it should have done. That's another problem in addition to the one of supporting the private hospitals.

The battle against rising costs is not unique to hospitals. We face it in government, and that's the reason for our major economy drive. Private industry has been waging this battle for years under the constant spur of competition.

What can be done about hospital costs? One approach already in use is voluntary control on price increases by all delivering health care.

How about tighter management and fiscal controls? What if cost accounting reports were subjected to review by a committee representing both administration and practicing physicians? There is criticism that the administration and management system has become too large to function effectively, that it takes too long to get things done, that the practicing phvsician doesn't have enough say in running the hospital, and that medical records systems are inadequate.

Since labor costs comprise about 70% of the current budget, an obvious question is whether the Wilmington Medical Center, which has a ratio of three or more employees per patient, is getting peak efficiency from its corps of employees. Some institutions are giving good quality of care at a lower cost, using an average of two or less employees per patient.

It is also obvious that there must be more emphasis all along the line on the need to cut waste and duplication. All health personnel must be made aware of the need to make economy a way of life.

Continued on page 191

Highlights

MEDICAL EDUCATION, RESEARCH AND MEDICAL CARE — A TROUBLED TRIO*

David E. Rogers, M.D. — *Dean of the Medical Faculty and Vice-President of The Johns Hopkins University School of Medicine.*

Medical education, biomedical research programs, health-care delivery systems, and methods for paying the bills for all three are in deep trouble.

Despite the development of the best system in the world for training skilled physicians and biomedical researchers, despite the monies we have had available to us to do the job, and despite the technologic expertise on hand, we find ourselves in a most uncomfortable position. Our educational programs are viewed with doubt by many, the proud institutions that house us are in such turmoil that we must fear for their future, our system — or nonsystem — for the delivery of medical care is in chaos, and our teaching centers, despite their apparent opulence, can't pay the bills.

To sound even gloomier, I believe our troubles will get worse — and far more rapidly than we are now willing to recognize — unless those who are in positions of significant responsibility for the different parts of American medicine work imaginatively and forcefully to change it dramatically in the immediate future.

The educational system established after the publication of the Flexner report was based on reasonable premises: first, that each family should have a responsible physician; second, that the majority of physicians would be general practitioners giving continual care to their constituents; third, that specialists would provide sophisticated advice and consultation, but would not give primary care themselves. This system functioned admirably through the late thirties, and it served us well.

However, in part because of its successes, this approach contributes to our current failings. Whether we admit it or not, our medical schools have continued to educate young physicians as though the ground rules were the same today as they were in 1910. But growth in medical knowledge has made it impossible for one person to confidently practice all the disciplines formerly covered by the general practitioner, and the move to specialized training has rapidly increased. Because of this increased knowledge and the needs of medicine and medical science, we have developed large, powerful, specially-oriented departments that tend to operate as independent baronies within medical schools. And this in turn has fostered nonflexible curricula that persist despite newly added and publicized opportunities for electives at all schools.

Although there has been much trumpeting of change, we have continued to operate as though there were a finite area of basic science relevant to all medicine that could be mastered in two years, and as though this plus two years of clinical training could prepare most students for the practice of medicine. However, these premises are dated and totally false.

We have failed to increase the output of the most skilled health professional, the physician, even though there were many years of evidence that a greater number was desperately needed. That this stems to a significant degree from lack of adequate funding of our educational mission does not excuse medical schools for their failure to take a leadership

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*Abstracted with the permission of the editors and the author from the October 1969 issue of *Medical Opinion and Review.*

role in overcoming the shortage of physicians. We have now reached the embarrassing position of importing almost 7,000 MD's a year, often from medically underprivileged countries, to fill internships and residencies, and despite our recognition of the growing need for these physicians in countries from which they come.

Let me pass on to my concerns about the future of biomedical research. One has only to look at the titles of papers delivered at the Atlantic City meetings last spring and compare the work reported there with the very broad health problems facing society today to realize that somewhere we are going astray. Major problems like infant conditioning, nutrition, population control, air pollution, or the problems of aging get scant attention at these major meetings of clinical investigators.

Although we have long stated that American medicine is the best in the world, increasing evidence suggests that this is not the case, and middle-class Americans, Congressmen, and ghetto populations recognize it.

Unfortunately, the medical profession — individual physicians, organized medical groups, and university medical centers — has, to date, ignored responsibility for developing an effective organizational structure for the delivery of health care. Thus, in contrast to virtually all other nations with whom we share cultural relationships in the Western world, we have no system into which we deliver our very expensive product, the physician.

Furthermore, I believe this failure has nurtured progressive unrealism in our medical educational system. Let me illustrate what I mean. Of each 1,000 citizens, approximately 470 see a physician each year. Of these 470 persons, about 25 require hospitalization. Of the hospitalized 25, less than one actually receives care in a university teaching center. While I do not believe that students must be exposed to all types of patients to learn how to be good physicians, to base our entire educational system on the less than 0.2 percent of patients who actually receive university hospital care has obvious hazards. And, this small sample prevents young physicians from acquiring a significant undertsanding of the real shortcomings in the system as it now exists.

Within our teaching centers, ambulatory-care programs have been designed to serve the specialized interests of our talented faculty rather than being smoothly oriented for the efficient care of a particular patient. While some of this is appropriate and necessary, we have let proliferation of special interests get way out of hand in most teaching centers. For example, at my present institution we have 144 different clinics and 35 different patient staging areas where people enter our care programs. We are consequently faced with the paradox of having giant centers giving exemplary care for complex illness while standing aloof in the midst of areas of excessively high infant mortality, alcoholism, drug addiction, suicide, illegitimate pregnancies, and so on.

A medical education is very expensive in the United States. Consequently, approximately 30% of this country's medical students come from families in the upper 3% of the income bracket, a shocking commentary in this land of "equal opportunity."

By my calculations, a mere $76,000,000 a year could eliminate all student tuition to medical schools — considerably less money than we expend on one sophisticated rocket launch from Cape Kennedy.

The problem of financing appropriate health care for all our population hardly needs comment. While Medicare and Medicaid have helped ease the enormous personal financial burden of illness, they do not go far enough. I think we must openly face the fact that appropriate medical care is still too frequently the privilege of those who can afford it rather than the right of all Americans. Our private fee-for-service system has, in my judgment, outlived its usefulness. While there are many problems evident in systems used in other countries that guarantee the costs of medical care to all citizens, they do work. English, Swedish, Australian, or other international colleagues view our present system as anachronistic and totally indefensible in the world's wealthiest nation. I believe American know-how could develop a workable prepayment insurance program that would couple private enterprise with the public sector and get this job done.

What might we do to improve the situation? First, I believe we need to rather dramatically recast our system of education. However, this may be t tough place to start the ball rolling; universities have *not* been important agents for change in our society.

We must develop a family-oriented health system. The development of programs organized to deliver effective preventive health advice and health care with continuity and movement from simple health-care centers to large medical centers could change the orientation of physicians. I think this would, in turn, cause our educational programs to adapt rapidly and would place greater focus on broader health concerns of society.

In voicing concerns about many facets of our present programs, I would not wish it thought that I value the biomedical science base less and the social service aspects of medicine more in planning for the future. Any system of enlightened medical education must rest firmly on the splendid biomedical base that we have developed during the last twenty-five years. In suggesting change, I have no desire to throw out the baby with the bathwater. The physician of the future must feel comfortable with and continue to learn basic biomedical sciences and clinical skills the rest of his days, and we must prepare him carefully for this.

I have considerable sympathy for our students and young faculty who demand more relevance, more attention to health in urban ghetto areas, and more concern for the entry of the black and the poor into the medical professions. However, it would be disastrous if we developed programs that turned out social "do-gooders" who lacked the necessary science backgrounds, intellectual discipline, or technologic know-how required of the modern-day physician. To do so would be similar to permitting socially concerned, caring students to fly the American 707 from New York to San Francisco with a full passenger load each day merely because they wanted to help their fellow men get there. We demand technical competence in plumbers, TV repairmen, pilots, and in physicians. Medicine is a tough, demanding field. It requires much of its participants, and it should. If we are to fulfill our obligations to the proud profession we serve, we must show society that we merit the label of *Doctor* with all that it implies.

CHRONIC DISEASE MORBIDITY AND INCOME LEVEL IN AN EMPLOYED POPULATION

Sidney Pell, Ph.D. and C. A. D'Alonzo, M.D., F.A.C.P. — *Abstracted from the January 1970 issue of the American Journal of Public Health.*

Data obtained from various epidemiological studies of male employees of the Du Pont Company were used to investigate the relation of income to morbidity from chronic disease. Age-adjusted rates were computed for five income categories, ranging from top level executives, designated Level I, to production workers, Level V. Level II consisted primarily of lower level executives, Level III of first line supervisors and various professional and technical personnel, and Level IV of clerical workers. The diseases included in the study were myocardial infarction, cerebrovascular disease, hypertension, obesity, diabetes mellitus, and cancer.

The pattern of the relation between income and morbidity was essentially the same for myocardial infarction, hypertension, and diabetes mellitus. In each, the rates were lowest in Levels I and II, and highest in Level III. For cerebrovascular disease, a strong inverse relationship was seen in Levels I through IV. The prevalence of obesity was also inversely related to income, and especially high in production workers. The incidence of cancer was about the same in Levels II through V, but significantly lower in Level I.

The lower rates generally seen in the higher income levels were probably explained less by deliberate selection than by the personal and behavioral characteristics of the men who rise to high level postions.

EARLY DELAWARE PHYSICIANS

JOSHUA CLAYTON, Delaware Physician during the Revolutionary Period, 1776-1787.

Dr. Joshua Clayton was the last president of Delaware and the first governor of the state as well as a Revolutionary soldier. He was born at Bohemia Manor in Cecil County, Maryland, July 20, 1744, the descendant of Joshua Clayton to whom William Penn had given a tract in Little Creek Hundred. After attending medical schools in Philadelphia, he started medical practice in Middletown and was engaged in that profession when the war broke out. At first he considered joining a New Castle County company, but when his old friends in nearby Cecil County offered him a commission in the Bohemia battalion of the Maryland Line, he accepted that post.

He was with the Maryland troops in the campaigns of 1776 acting both as a surgeon and a line officer. In 1777, he was given the rank of major, and General Washington appointed him to his staff. He was with Washington during the Battle of Brandywine and later at Valley Forge. He married the adopted daughter of Governor Richard Bassett. Clayton after the war entered politics and was elected to the State House of Representatives in 1785 and 1787. He continued to practice as a surgeon and was one of the incorporators of the Medical Society of Delaware.

Clayton was elected president of Delaware in 1789, and he was in office when the constitution of 1792 was adopted changing the title of the state's chief executive from president to governor. In the fall of 1792 he was elected governor and served until 1796.

In 1798 he was elected to the U. S. Senate to succeed John Vining, who had resigned. While attending his first session of that body in Philadelphia, he was stricken by yellow fever in the epidemic of that year. He was a personal friend of Dr. Benjamin Rush, the famous Philadelphia surgeon and signer of the Declaration of Independence, who pleaded with him to remain in Philadelphia under his care. But Dr. Clayton insisted on returning to his home in Delaware, where he died of yellow fever at the age of 54. He was buried at Bethel, Maryland. His son, Thomas Clayton, also served as a senator from Delaware, and his nephew, John M. Clayton, became senator and U. S. Secretary of State.

Adapted from *Forgotten Heroes of Delaware* by W. E. Wilson, available from Deltos Press, Box 313. Cambridge, Mass., at $2.95 paper, $5.95 library buckram.

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THE DECLINE OF MAN

Since early man lived close to his work, he was spared the wear and tear of commuting. Self-employed, he was never upset by having someone less competent promoted over him. Nor was his blood pressure made to rise dangerously at thoughts of the income tax, Big Government and giveaway programs.

When the decline began is not known precisely. It was slow at first. It was hundreds of thousands of years before man became overweight, lost his muscle tone and started going to a psychiatrist because there was something wrong with his sex life. What is clear is that, once the decline began, it became increasingly rapid. Man has deteriorated more in the past 50 years than during any previous millennium.

This decline, both physical and spiritual, has shown such increased rapidity with each generation that it can hardly be an accident. There is too much evidence of a carefully thought-out plan.

Obviously, man has decided to do away with the human race.

The Depopulation Explosion, Richard Armour, *Playboy*, Sept 6, '68.

Editorials

R. O. Y. WARREN, M.D.: In Memoriam

On the first Saturday of December 1969, the Academy of Medicine and the Delaware Chapter of the American Academy of Pediatrics held its first annual *R. O. Y. Warren Memorial Lectureship.* These two organizations are able to execute this memorial affair through the willing largesse of the many friends of Dr. Warren: educators, politicians, former patients, friends, physicians, etc. It is an affair held to commemorate Dr. Warren, a man who was not only an outstanding pediatrician but also a friend to many, both plebeian and patrician.

Dr. Warren walked many paths of endeavor — medical, educational, religious — but always with a dignified warmth and compassion and a strong willingness to undertake new concepts and proposals, and an even stronger desire to see these innovations accomplished.

In terms of seniority amongst pediatricians in Wilmington, only Doctors Handy and C. E. Wagner have longer records of service to the community. Dr. Warren had been keenly interested and instrumental in the development of the Child Guidance Clinic and, most recently, the Child Diagnostic and Development Center. In his personal practice, he had been equally interested in the "new pediatrics," especially that phase devoted to the mother-child relationship. This was exemplified by his weekly visits to the University of Pennsylvania for their discussion groups and his interviewing and tape recording of his interviews with mothers about their feelings about their pregnancies, children, etc. He offered a calm atmosphere of security to these mothers, but equally important, the same feeling prevailed in his dealings with children, educators, fellow physicians, etc. In the two years prior to his sudden demise, he had become acutely aware of the teenage dilemma and had constructed office interviews suited to this age group only, in an effort to communicate with them about their special problems, including the use of drugs.

In spite of his many interests and responsibilities, there was always a feeling that one could "barge" in on Dr. Warren to take advantage of his counseling and his ability to listen, not only professionally but concerning personal matters as well. One did not always have his agreement and one did not always agree with his opinions and concepts, but everyone did respect his verbalizations, for they were most often the correct course of action.

It is unfortunate that Dr. Warren could not have lived to see the forthcoming Wilmington Medical Center-Jefferson Medical College affiliation, for he was not only deeply interested in postgraduate education, but he also gave much of his time and efforts to serving as Director of Education, a job he accepted as a part-time affair but to which he seemed to devote full-time application. I am sure he would have much preferred to have spent his well-earned leisure time in his favorite pastimes of going to Philadelphia for concerts, planning another "wanderlust" expedition, or just tinkering around his beloved Mahogany Hill and devoting more time to his family.

In spite of all his many interests and undertakings, Bob Warren was acutely aware of his responsibilities as a husband and a father and endeavored to "practice what he preached." Mrs. Warren joined her husband in many of his outside responsibilities, and those of us who were fortunate enough to be involved with the July outing for the housestaff and medical staff at Mahogany Hill will never forget their genuine and gracious hospitality. The accomplishments of their three sons, each in a different field of endeavor, reflect not only on each son but on their parents as well.

It is hard not to continue on and on in the recounting of the humaneness and integrity of Dr. Warren. One ends up trying not to sound too sentimentally verbose; he would not tolerate such a display and it would only detract from the quiet greatness of his person. Fortunately, there are many people, not only in Wilmington but internationally as well, who will never forget Bob Warren nor will they stop trying to verbalize their appreciation for having known him.

He not only believed in the ideals of the Christian-Judaic principles but he was willing to make the necessary sacrifices to be a "doer" as well as a "talker." He set examples of action few of us will ever attain, but which all of us can recall in our dealings with him.

The physicians involved with the execution of the annual Memorial Lectureship undertake their task with a sense of responsibility to produce a finished product that Bob Warren would have accomplished and appreciated.

Warren Johnson, M.D.

SURVIVING MEETINGS

Most surgeons are inherently impatient, active people with overwhelming needs to do something — anything. The obvious conflict of such a personal pattern with those of a majority of experienced committeemen on medical and community meetings is evident to anyone who has been asked to participate in hospital review boards, bed utilization committees, or a medical alumni advisory group, and the fashionable regional, comprehensive, urban, community, and human relations boards. The increasing number of such meetings requires development of techniques to insure survival without risking brain damage from several clock hours of boredom and adverse physiologic effects of everything stasis.

For example, one may use the inevitable tablet and yellow lead pencil to write an editorial.

Doodling is socially acceptable but, unless one is prepared, it is a limited exercise. The experienced committeeman has taken a few art lessons and spends his time sketching portraits or caricatures of his fellow captives. This is a powerful weapon and can be used to devastate the meeting or a particularly annoying chairman.

Reflective personal notes are difficult to work on in competition with the dissonant babble of voices and — equally disturbing — sudden silences.

Carrying on personal conversations is frowned on, and leaving the meeting at intervals with a colleague may be misinterpreted as reflection of physiologic aging, which may be undesirable if one is ambitious to assume leadership.

Of course, one can always instruct one's secretary to call about fifteen minutes after the meeting is started, but this ploy can't be used too frequently or the intent becomes obvious.

Sleeping at a meeting is socially unacceptable. Physicians can be immediately identified since they fall asleep immediately after the lights are lowered to show slides. Shading one's eyes or even supporting the chin is suspect. The experienced participant is careful to maintain an uncomfortable position. The talented man nods, orients his head to the speaker, and smiles and votes while sleeping. Some internists have developed this facility as a result of prolonged daily "grand" rounds.

As a last resort, one actively participates in the meeting, especially if a friend is chairman and is desperately trying to stimulate the group. If an abrupt statement in a loud voice has no relevance to the ongoing discussion, one can always follow with a modifier that "he was just testing the water," or "throwing it out for a look-see," or whatever trite phrase is fashionable at the moment. Old phrases like old jokes may earn demerits.

Last, always leave the meeting with a show of enthusiasm. Never fail to pick up the materials distributed during the meeting. Always write down the date of the next meeting — after demonstrating that you can't possibly attend on several proposed dates. Compliment your neighbors, the chairman, and leave rapidly as befits a busy man.

George E. Moore, M.D.

Excerpted from the editorial, "On How To Survive Meetings," *New York State Journal of Medicine,* February 15, 1970.

MALNUTRITION AND MENTAL RETARDATION

New evidence suggesting a relationship between malnutrition and mental retardation should be cause for major concern. The recognition that malnourished children may emerge from childhood lacking the ability to reach their full genetic intellectual potential introduces a new and frightening note into theories of national development.[1]

The implications are ominous. For many years we have assumed that, given educational opportunities and environmental advantages, each normally born infant has every prospect of growing up to be bright and productive. It is now suggested that malnourished children may be basically dull. The significance of this can be appreciated when we recognize that as many as two-thirds of the children of most developing countries are now suffering from some degree of malnutrition.

The relationship of malnutrition to mental growth dramatizes the issue. However, the insidious drain of malnutrition on national development takes other significant forms. Half the deaths in the developing countries occur among children under six years of age. In certain African countries, Libya for example, a mother must have five children to assure that one reaches the age of fifteen. In Northeast Brazil, 48% do not survive the first year of life; by the age of four, 63% have succumbed. In parts of Southeast Asia, 40% of the children die of disease in their first four years. This is a proportion of deaths not reached in the United States until the age of sixty.

The vast majority of these child deaths are attributed to infectious diseases. Yet most of these diseases are relatively minor childhood ailments. The cause of the death is not the infection itself but usually the malnourished condition of the child when he contracted it. In a country like Ecuador, child death due to measles is more than 300 times greater per thousand of population than in North America.

For a sizeable portion of the survivors, malnutrition permanently retards physical growth. In many countries the average twelve-year-old has the physical stature of an eight-year-old in Europe and North America.

B.Z.P.

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[1] *Malnutrition and National Development,* Alan D. Berg, Foreign Affairs, Oct. 1967.

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COMMENTS: Governor Russell W. Peterson

Continued from page 184

The concerns and problems in operation of the Wilmington Medical Center are focused on the areas of patient care, medical manpower and costs. In setting priorities for hospital expenses, we must consider the areas of patient care, teaching and research. As far as state dollars are concerned, it would appear to me that patient care must have top priority.

These are not just administration problems, or staff problems, or state problems. They are problems that concern all of us, the state, the board of hospital trustees, the administration, the practicing physician, the employees and the patients. All must be involved in finding the solutions.

We must work together in partnership. You are planning for the future. So is the state. What each does will affect the other. The timing of various things needs to be considered carefully so that we use our resources on top priority programs. The Governor's office is ready to help in any way it can. We already have a number of committees studying and planning for health services. But I am going to ask Dr. Ingram, Secretary of our new Department of Health and Social Services, to work with you and the several committees to see if a simpler and more effective means can be found to get at some of our problems.

It is clear that to do the job we need a good partnership among the trustees and administration of our hospitals, the practicing physicians, Blue Cross-Blue Shield and the State Government.

President's Page

PREPAID GROUP MEDICAL PRACTICE FOR DELAWARE?

At the meeting of the Council of the Medical Society of Delaware on May 14, 1970, the following proposal was presented by Dr. David Platt:

1. That the State Medical Society take the initiative in setting up a statewide, State Society-sponsored comprehensive prepaid medical care program;

2. That, at the beginning at least, the State Medical Society be the coordinator and in cooperation with Blue Shield, administer this on a basis that the plan will be offered to all individuals and groups in the State, including Medicare, Medicaid, industry, union, and fraternal groups;

3. That the Government be asked to pay premium costs for the medically indigent who are not otherwise covered;

4. That participation in this plan be by all members of the State Medical Society, except those individuals who elect in writing to exclude themselves;

5. That payment to individual physicians be on the basis of units of service rendered, or by such other method to be researched and then approved by the physician membership;

6. That, at the outset at least, service be rendered through the existing offices of physician members. Later research and experience may or may not indicate a recommendation to regroup some of the care in centralized facilities;

7. That the administrative centralized officer accept requests for help and parcel them out to physicians of the State Medical Society;

8. That, later, consideration be given to the advisability of including in the plan centralized or regional laboratory and other ancillary facilities, multiphasic screening, and computerized history-taking and record-keeping;

9. That this plan hopefully will eliminate the need for charity hospital clinics;

10. That intern and resident out-patient hospital training be done on a preceptor basis in participating physicians' offices;

11. That the State Medical Society urge the Association of Delaware Hospitals to consider the feasibility on its part of setting up a comprehensive prepaid hospital policy and that the two be dovetailed to provide comprehensive prepaid medical service of all kinds from beginning to end for all citizens of the State.

The Council discussed the proposal in detail and approved it in principle, recommending further study.

On July 1, 1970, representatives of the Medical Society of Delaware, Blue Cross-Blue Shield, the Department of Health and Social Services, the Wilmington Medical Center, the Association of Delaware Hospitals, and the Health Planning Council, Inc. met at the Academy of Medicine and explored Dr. Platt's proposal further. The following impressions resulted from that meeting:

1. Prepaid Group Medical Practice for the State of Delaware would be desirable for the following reasons:

   (a) Group Practice would provide a more efficient method of delivery of health care in this modern age of ever increasing demand for health services.

   (b) The emphasis in health care would be shifted from care of the sick to maintenance of health and preventive medicine.

   (c) The physicians' special training and talents would be used more efficiently and effectivelv.

(*Continued on next page*)

Delaware Academy of General Practice

FAMILY HEALTH FOUNDATION

The Family Health Foundation of America, established in 1958 by the AAGP as an exclusively educational and charitable foundation, has recently provided grants of $242,150 to family education programs throughout the nation. When previous amounts given to seven of the nine current recipient institutions are added to the 1970 grants, the total comes to $494,900.

The nine current education grants are:

$13,000 to the University of Miami School of Medicine Family Medical Program;

$30,750 to the Hoag Memorial Hospital Presbyterian family practice residency program in Newport Beach, California;

$40,000 to the fellowship in family medicine program at Harvard;

$8,000 to the University of Alabama for a preceptorship program;

$72,000 to the University of Minnesota for a department of family practice;

$7,500 to the Nebraska University School of Medicine for a professorship in general practice;

$15,000 to the University of Texas for a department of family practice;

$13,900 to the University of Mississippi for a department of family practice;

$42,000 to Pennsylvania State University for a combined fellowship in behavioral science and family practice.

Total amounts which have been granted to each of these nine current recipients are: University of Miami, $75,000; Hoag Hospital, $75,000; Harvard, $120,000; University of Alabama, $16,000; University of Minnesota, $108,000; University of Nebraska, $15,000; University of Texas, $30,000; University of Mississippi, $13,900; and Pennsylvania State, $42,000.

A tenth 1970 grant is $2,500 to the United States Committee for the Fourth World Conference on General Practice, to assist with expenses of the August 12-15 conference in Chicago.

Although the Foundation's 1970 grants are concentrated in the area of education programs, its allocations over a 12-year period have assisted in a wide variety of other ventures whose purposes are the increasing of medical, surgical and scientific knowledge and fostering the concept of comprehensive medical care.

Foundation income is principally from contributions. Dividends from the group life insurance program of the AAGP have resulted in income of more than $100,000 annually to the Foundation.

* * *

PRESIDENT'S PAGE

(d) All segments of the population would receive the same high quality health care.

2. The physicians of the Medical Society of Delaware will need to be more knowledgeable of the advantages of Prepaid Group Practice for themselves and for all citizens of the State in raising and maintaining the level of health.

The Medical Society will study, with the assistance of the National Center for Health Services Research and Development, ways and means of establishing a Prepaid Group Practice Comprehensive Health Care Program for the State of Delaware. When a tentative plan has been completed, it will be presented to the physicians of Delaware for their consideration and hopefully, approval and acceptance.

I hope all physicians in Delaware will indicate a willingness to participate in such a plan.

Henry H Stroud

In Brief

Speakers on "Ask the Doctor"

Speakers for August, 1970, on the Tuesday radio program (11:05 a.m. WDEL) produced by the Medical Society of Delaware are: August 4, Walter L. Bailey, M.D., *Prosthetic Replacement of the Hip Joint;* August 11, James F. Reamer, M.D., *Pap Smears Used For Cancer Detection in Women;* August 18, A. Henry Clagett, Jr., M.D., *Cardiovascular Disease;* August 25, Joshua Kalin, M.D., *Dyslexia.*

In The News

Delaware is well represented in the top brass of AMA, with the newly-elected Vice President being H. Thomas McGuire, M.D. and with the Chairman of the Legislative Council being William O. LaMotte, Jr., M.D.

Honors in the AMA have come to two State Society presidents in the past. James Couper, who was President of the State Society from 1835 to 1841 and again from 1843 to 1845, was Vice President of the AMA in 1863. Henry F. Askew, who was President of the State Society from 1851 to 1855 and again from 1875 to 1876, was Vice President of the AMA in 1859 and was President in 1867, the only Delaware physician to achieve this honor to date.

Judith Tobin, M.D., is the newly appointed member of Delaware's Board of Medical Examiners. She replaces Philip Portz, M.D., who resigned.

Eye Injuries

The National Society for the Prevention of Blindness carried out an intensive nationwide publicity campaign prior to the March 7, 1970 solar eclipse to warn the public about the possibility of serious eye damage from viewing the eclipse directly. It was recommended that a simple indirect viewing device, involving the projection of the sun's rays through a pinhole onto a white background, be used or that the eclipse be watched on television.

Following the eclipse an extensive survey was conducted in order to evaluate the effectiveness of the public information program in preventing eye damage and to determine the incidence of eye injuries. A special report form was sent to all board-certified ophthalmologists in the United States and to all hospitals having 75 or more beds and an emergency room in states east of the Mississippi. It was requested that the form be returned even though there were no injuries to report. Space was provided on the form for indicating "no injuries."

The survey reported 134 eye-damage cases following the solar eclipse. *The State of Delaware had no cases to report.* A survey after the last eclipse in the U.S., in 1963, turned up 247 cases of visual damage.

Regional Kidney Program

The Greater Delaware Valley Regional Kidney Program, a project of the University City Science Institute, Philadelphia, is setting up two different information centers for physicians of the region: A) A registry of all hemodialysis capability within the region: Eastern Pennsylvania, Southern New Jersey and Delaware. The purpose of this is to aid the physician who is trying to locate a dialysis training facility or an institution that can provide chronic treatment. B) A registry of tissue and blood typing data on all potential candidates for kidney transplant. This information will be put into a computer data bank for rapid retrieval and crossmatch with cadaver kidney donors to provide the best possible match among the transplant candidates.

Any physician having a patient in need of chronic dialysis therapy, either institution-based or on home-training, and wishing to use the facilities of the Greater Delaware Valley Region, can call the office of the Regional Kidney Program for information on bed vacancies. After verifying the information on file, the inquiring physician will be informed as to the location of such vacancies. Any further arrangements will be between him and the various facility directors. The number to call for this service is: 215 EV 7-2255, Extension 65, any time from 9 a.m. to 5 p.m., Monday through Friday.

New Program

Fellowships in acute care medicine for men and women M.D.s are now being initiated at Woman's Medical College of Pennsylvania. These fellowships — funded by the Greater Delaware Valley Regional Medical Program — represent a second and new phase of WMC's retraining program for physicians which has been in operation for the past two years. This new, acute care fellowship program should prove especially attractive to women physicians who wish to become proficient in a greatly needed specialty, but, because of family responsibilities, can not assume the time commitments of a regular residency program. Most full-time fellowships are likely to be for one year with stipends comparable to those of first year residents.

This year, also under a grant from the Greater Delaware Valley Regional Medical Program, WMC will again offer its retraining program for women physicians who have been out of practice or doing limited practice, enabling them to return to residency programs or to the active practice of medicine. The program is also open to male physicians. For further information about either program, contact Ethel Weinberg, M.D., assistant dean, Woman's Medical College, 3300 Henry Avenue, Philadelphia, Pa., 19129.

Clinical Center Study

The cooperation of physicians is requested in the referral of patients for a continuing study of squamous cell carcinoma of the oral cavity, pharynx, and larynx being conducted by the Radiation Branch of the National Cancer Institute, NIH, Bethesda, Md. Previously untreated patients with moderately advanced or advanced disease will be evaluated for treatment with radiation therapy. Physicians interested in having their patients considered for admission may contact: Thomas C. Pomeroy, M.D., Clinical Center, Room B1B-41, NIH, Bethesda, Maryland, 20014, Tel (301) 496-5457.

CLINICAL NOTICES AND MEETINGS

AMA Occupational Health Congress

The AMA 30th Annual Congress on Occupational Health will be held Sept. 30-Oct. 1, 1970, at the Century Plaza Hotel, Los Angeles.

EEG Society Scientific Session

The American EEG Society announces that the 1970 Meeting will be held in Washington, D.C. at the Shoreham Hotel, September 17-19, 1970. For further information write: Philip T. White, M.D., Secretary, American Electro-encephalographic Society, Marquette School of Medicine, 8700 West Wisconsin Avenue, Milwaukee, Wisconsin, 53226.

Otolaryngologic Assembly

The Annual Otolaryngologic Assembly of 1970 will be held September 19-25, 1970, in the Eye and Ear Infirmary of the University of Illinois Hospital. The Department of Otolaryngology, College of Medicine, University of Illinois at the Medical Center, offers a condensed postgraduate basic and clinical program for practicing otolaryngologists, designed to bring to specialists current information in medical and surgical otorhinolaryngology. Interested otolaryngologists should direct their inquiries to: Otolaryngology, P. O. Box 6998, Chicago, Illinois, 60680.

ACOG PG Course

A postgraduate course will be given October 15, 1970, at Chalfonte-Haddon Hall in Atlantic City, N.J., at the District III Meeting of the American College of Obstetricians and Gynecologists. Those attending are invited to attend the remainder of the meeting on October 16th and 17th as guests of ACOG. For further information write: Harry Fields, M.D., Program Chairman, Postgraduate Course, ACOG, 133 South 36th Street, Philadelphia, 19104.

AACP Assembly

The Second Fall Scientific Assembly of the American College of Chest Physicians will be held at the Century Plaza Hotel, Los Angeles, Oct. 25-29, 1970. For further information contact: Stephen T. Donohue or Thomas F. Walsh, 420 Lexington Avenue, Suite 417, New York, N.Y., 10017.

Tuberculosis Today

The National Communicable Disease Center, Atlanta, Georgia will offer the course, *Tuberculosis Today,* three more times during 1970, these being September 21-25, October 26-30, and December 7-11. Enrollment information and application forms can be obtained from State Health Departments or from the Tuberculosis Branch, National Communicable Disease Center, Atlanta, Georgia.

Book on Biomedical Sciences

The Instrument Society of America (ISA) announces a new 167-page book, *Biomedical Sciences Instrumentation,* which encompasses the latest instrumentation advances in hospital care for the critically ill. It concentrates on a systems analysis of the intensive care unit, emergency equipment and instrumentation developments, and rapid diagnostic support equipment. The functions of such essentials as resuscitators, cardiac pacemakers, telemetry, and various monitoring systems are thoroughly described. Orders including a check for $10.50 should be mailed to: ISA, Publications Dept., 530 William Penn Place, Pittsburgh, Pa. 15219.

CLASSIFIED AD SECTION

OBSTETRICIAN-GYNECOLOGIST. Jefferson graduate. Licensed in Pennsylvania. Would like Delaware location.

ANESTHESIOLOGIST. Board-eligible. Immigrant visa. Interested in practicing in Delaware.

For further information, contact the Medical Society of Delaware, 1925 Lovering Avenue, Wilmington, 19806. Ph 658-7596.

"Physician wanted" ads will be listed without charge. All others:

Rates: 30 words, set solid. One insertion, $4.00.

Closing Date: Advertisements must be received by mail by the first of the month for inclusion in the current issue.

Terms: All advertisements payable in advance to Delaware Medical Journal, 1925 Lovering Avenue, Wilmington, 19806.

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

CYCLAMATE — Political Bandwagon?

Authorities in several countries were thrown variously into uncertainty or hysteria by the recent U.S. ban on cyclamates. Within a week, Sweden, Finland, Japan, Canada, and the United Kingdom followed suit. The U.S. decision was based primarily on experiments showing that 6 to 12 rats fed 2,500 mg/kg of cyclamates daily throughout their adult lives developed an "unusual" form of bladder cancer. The maximum permitted dose for human daily consumption is 50 mg/kg. At a dosage 50 times that previously considered safe for humans, it might even be surprising if the rats had failed to develop tumors. Not only were the rats given doses of cyclamates that would sate the sweet tooth of a horse, but they had not even been fed cyclamates alone; they received a mixed diet of cyclamates and saccharin. Was it the cyclamates or the saccharin, or synergism between the two that caused the malignant looking cells in the animals' bladders? In commenting on the U.S. ban, the journal "Nature" noted that the FDA had not bothered to provide authorities in other countries with copies of the new evidence, which, according to "Nature," was about as solid as cotton candy. "In neglecting to forewarn other government authorities of the new results available to it, the FDA seems to have acted with a surprising lack of courtesy as well as a disregard for the niceties of weighing scientific evidence scientifically. The new evidence may indeed show that cyclamates at the presently permitted levels create an unacceptable risk to health, but the way in which the evidence has been handled has transformed the question from a largely scientific issue into a "political bandwagon." Inhorn and Meisner of the University of Wisconsin believe that the U.S. ban on the use of cyclamates was premature and of too great import to be made by one or a few government officials at a "hurried meeting" without thorough investigation and review by the scientific community. They state in part: " . . . . we find it inconceivable when there is so much human data available, that cyclamate be discarded on the basis of experiments employing only 12 rats. We can see no other explanation for this hasty action on the part of the FDA and the Secretary of Health, Education, and Welfare except that political or economic pressure caused them to bypass the established scientific evaluation procedures."

Nature 224:298, Oct 25, 1969 and 298, Nov 1, 1969; Inhorn SL and Meisner LF: Univ Wisconsin, Science 166:685, Nov 7, 1969.

METHYLDOPA — Hepatic Injury

A hypertensive patient who routinely consumed one quart of beer and three ounces of whiskey daily was started on methyldopa (Aldomet—Merck Sharp & Dohme) therapy (500 mg twice daily). One week later the patient developed abdominal discomfort, diarrhea, and pruritus and passed dark urine. During the following four months, treatment with the antihypertensive was interrupted on two occasions. On each occasion pruritus decreased but recurred on readministration of the drug. The patient subsequently became jaundiced and was hospitalized. Results of biochemical tests and needle biopsy of the liver were consistent with a diagnosis of viral hepatitis or drug-induced hepatic injury. Treatment with methyldopa was suspended and the biochemical abnormalities reverted to normal. The patient was later challenged with methyldopa on two occasions with resulting recurrence of liver dysfunction. However, each response was less severe than preceding attracks. Methyldopa-induced liver injury may occur within one year after treatment is started but usually occurs during the first three months of treatment. Drug dosage seems irrelevant in precipitation of the disorder.

Elkington SG et al: Yale Univ School Med. *Circulation* 40:589, 1969.

THE FORUM

Environment And Health

PREMEDICAL TRAINING AT UNIVERSITY OF DELAWARE

W. Robert Bailey, Ph.D.

The University of Delaware like other universities and colleges offers preprofessional training for students planning a career in medicine. Premedical preparation is not a rigid program, and although the majority of premedical students do major in biology or chemistry, undergraduate training in the humanities or social sciences is quite acceptable. Relative to these latter areas, however, the student must become fully aware of the minimal science requirements, namely in biology, chemistry, and physics, for admission to medical school. The most important criterion for success in admission is a strong grade point index (above 3.00 in a 4 point system).

The University of Delaware has a Health Sciences Advisory Committee, the membership of which represents the departments of biology, chemistry, physics, psychology, and mechanical engineering. Members of this committee, as well as other faculty members, assist students in structuring their undergraduate program. A course in organic chemistry, at a level acceptable for a chemistry major, currently receives much emphasis. The committee is charged with the responsibility of guiding, evaluating, and finally recommending the students. Information on course sequences in various fields can be readily obtained from the office of the chairman in Wolf Hall. Evaluation of the premedical student begins in the sophomore year with the cooperation of professors in chemistry, biology, physics, and English literature, who relay helpful information to the Advisory Committee. Before the end of the junior year, students are asked to appear for an interview by some member of the advisory committee. At this time, personal data are collected on the student and a more complete image of the student evolves. The Medical College Admissions Test is normally taken in May of the Junior Year.

The committee meets after the third year grades are in to make final evaluation and an appropriate recommendation based on all available information. Because of the keen competition for admission to medical school, students are strongly advised to begin processing their applications in the summer following the junior year. Committee evaluations are forwarded to the schools designated by the student applicant.

It is now public information that the University of Delaware and the Jefferson Medical College of Philadelphia have established a joint program in medical education. In essence, this means that qualified *bona fide* Delaware residents are afforded improved opportunity for entering medical school. Through the agreement, Jefferson will hold up to 20 places annually in their freshman class for qualified applicants from the State. Premedical students at the University of Delaware who are not State residents are admitted also to other medical schools if they qualify. Students have been accepted by the University of Pennsylvania, Temple, Hahnemann, Maryland, Duke, Virginia, Harvard, Cornell, and others. It is important for a student to recognize that admission to medical school anywhere today is highly competitive, and only the academically capable and well motivated students will gain admission.

W. Robert Bailey, Ph.D., is Professor of Biological Sciences and Chairman, Health Sciences Advisory Committee, University of Delaware.

This page is sponsored by the Delaware Tuberculosis and Health Society.

Delaware
Medical Journal

AUGUST, 1970
VOLUME 42
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CHALLENGES TO THE MEDICAL CARE SYSTEM

• Richard M. Magraw, M.D., has written a provocative book, Ferment In Medicine (W. B. Saunders Co., 1966) in which he explores the interface between medicine and society, both of which appear to be proceeding at full throttle on courses of self-destruction or at least dinosaurian extinction.

An experimental model to meet some of these problems locally is set forth herein. Whatever of merit is found in what follows may be attributable to Dr. Magraw.

Allston J. Morris, M.D.

To say that we live in a time of great change, a time of ferment, even a time of revolution, is to belabor the obvious. To say that these changes will soon vastly alter the traditional patterns of medical care — the patterns we grew up in and with which we are comfortable — is to state the thesis of this discussion. An experimental model which may evolve to meet the changing health care needs of our citizens will be developed from this thesis.

Many forces are acting to produce change, and probably all of them work to change the methods of delivery of health care. It may be useful, however, to separate them into two broad categories: forces acting in the community at large and which most physicians understand only as we are newspaper readers, interested citizens, and amateurs. The other forces are those that act upon and within the health care industry itself and to which most doctors can and should bring to bear the expertise of the professional. As we shall see, there is much overlapping between the two sets of forces.

I have listed four main yeasts, acting to produce ferment in the community at large. The first of these is the very largeness of the community. We have, since the beginning of World War II, seen an increase in the population of the world from 2.3 billion to 3.6 billion; of the United States from 150,000,000 to over 200,000,000; of Delaware from 280,000 to over 500,000; of New Castle County from 175,000 to more than 400,000. (Figure 1)

For many thousands of years population changes on our planet followed linear rules of change. Recently the slope of the curve has become more nearly exponential. After husbanding our numbers for millenia, suddenly sensible men can see a danger that we may

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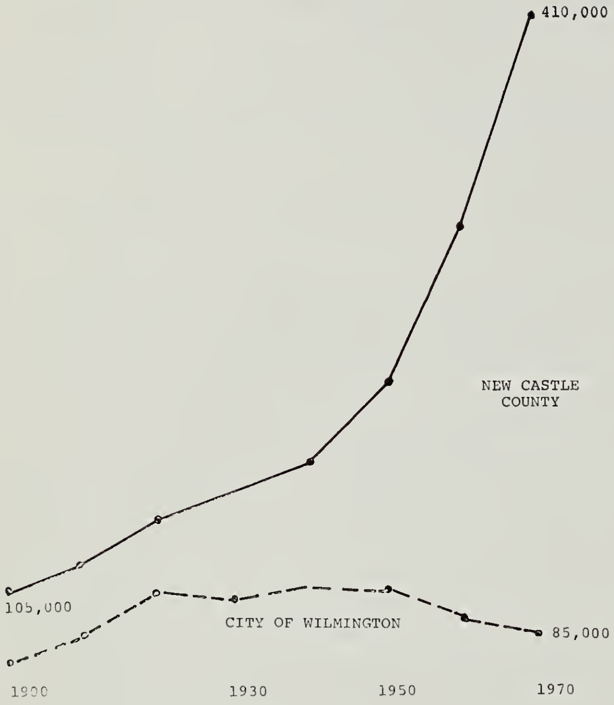
Dr. Morris is Senior Attending, Department of Medicine, Wilmington Medical Center.

This paper in a slightly different form was originally presented at a meeting of the New Castle County Medical Society, November 18, 1969.

Figure 1



RECENT POPULATION TRENDS

already or will soon have more people than we can feed, much less tolerate.

The second major change we must list is that racial attitudes are different. We are sometimes tempted to believe that this is a strictly American phenomenon, dating to *Brown vs Board of Education* in 1954. Yet in this same period most of the independent new nations of Africa have been formed, and there is no longer any great Asian or African empire ruled from Europe.. In this country there has been a migration of black Americans from the rural as well as the urban South to the urban North. There have been sit-ins, confrontations, polarizations, overwhelming strains on school systems, on welfare systems, and on the good humor of every citizen involved. As a corollary there is an insistent demand that every American has a right to good health and good health care no matter what the state of his purse or his skin.

Partly as a result of population increase, partly as a result of a changing racial attitude, partly and more especially the result of inadequate foresight and planning, our third major problem is one we might call metropolopathy — the sickness of our cities. Like neoplasms which outgrow their own blood supply, our cities have grown by lamellar concretions of suburban grass and gas, while their centers have become necrotic, the slough polluting the air, the water and the suburbs.

In Wilmington, and we are not unusual as American cities go, we have seen since 1940 a great exodus of whites northward across the Brandywine, while immigration and fertility, and housing practices which have made an exodus difficult for blacks, have resulted in a city which is 40% black and 50% poor.

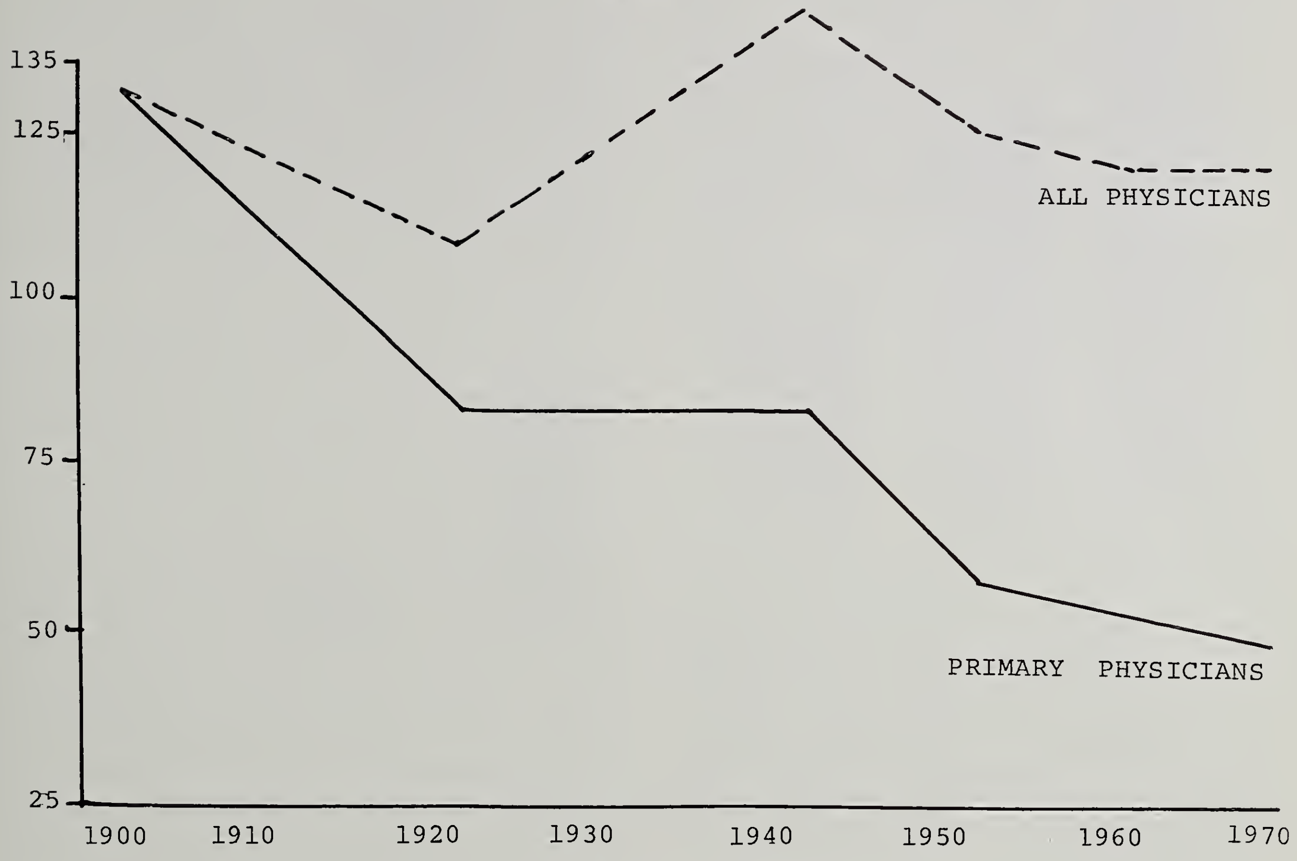
Finally I should mention something which I think we all sense as important. It is called the generation gap; it is called alienation; it is called polarization. What I am speaking about is the rejection by large numbers of young people of a good many of the values you and I live by. I am not so sure they reject the values we say we believe in; the trouble is they seem not to hear us when we say we value peace, love, and humanity. And they obstinately point out that we are at war, not peace; that our kind of love seems not even to turn us on; and that we've demonstrated precious little humanity in our treatment of those whose skins are different, or who speak with alien tongues, or who simply are poor.

Never mind whether they are right or not. But do not doubt their power to get things done. More than one great university has changed its plans about building a gymnasium or a new science building because these students we find so hard to communicate with believed an injustice was being done to the local community — usually made up of the poor and often black.

They are idealistic — but they are impatient, too! Perhaps they see better than we do that the old comfortable rate of change just isn't adequate any more. Some of them, in our medical schools today, see with great clarity, perhaps born of oversimplification, the faults of our medical care system.

These, then, are the major changes taking place in the broad community: our rapidly

Figure 2



PHYSICIANS IN NEW CASTLE COUNTY

increasing population, changing racial attitudes, metropolopathy and the alienation of the young. They lead logically to the changes taking place in medical care.

These changes we perhaps understand better, but that does not always mean we find it easy to cope with them.

We have mentioned indirectly what has been called the rising tide of expectations. Since World War II the concept that poverty is an innate part of the American economic life has been publicly and widely challenged. A Republican president has solmenly proposed what amounts to a guaranteed annual wage. And this mood has spread to the poor themselves. Welfare costs have skyrocketed, and in New York City, at least, much of the rapid increase in costs has been due to a demand on the part of the poor that their rights under the welfare system be clearly explained to them. Note carefully that the last sentence contained the words "demand" and "rights." This is a new mood. And one of the *rights* being insistently *demanded* is for first rate medical care for everyone, without regard for ability to pay for it on a fee for service basis. The medicare law and Title XIX are a pyramid, only the base of which has been put in place. But when the pyramid is completed — probably during the 1970's, it will represent one way in which our various governments have tried to meet that demand. It will no more go away in our time than the Great Pyramid at Thebes.

While this has been going on, medicine has become specialized. Don't let the fact that 97 of the 459 doctors in this county are general practitioners fool you; they too are specialists in that the list of medical services which they do not perform far exceeds those they do. Numbers of physicians expressed per unit of population has not changed so very greatly, thanks in considerable part to our ability to attract young physicians who have been born and educated in countries far less able to pay for their education than we are.

But the number of services demanded by each patient has risen and concurrently we physicians have been forced by the sheer complexity of our subject matter to specialize. If we consider just those physicians whom we may call primary because they are the first doctors to be consulted by the patient, we are talking about general practitioners, pediatricians and internists. And their numbers are steadily declining from 63 per 100,000 in New Castle County in 1950 to 58 in 1960 and to 47 in 1970. In 1930, 17% of medical doctors were full time specialists; in 1964, 61%. (Figures 2 and 3)

Two counter forces have somewhat balanced this trend. One is that many non-primary physicians do, indeed, act to a limited extent as primary physicians. Our more medically sophisticated population now performs a good deal of its own triage and, as an example, perhaps the majority of women with abnormal vaginal bleeding go directly to a gynecologist, entirely short-circuiting the primary physician.

The other counter force is the enormous growth in the use of the hospital emergency room as a primary physician. This may have been of greatest use to the poor and to the victims of metropolopathy, but the affluent suburbanite has made good use of it too.

The past forty years have seen the growth of third party payment for medical care. In 1929 the very first insurance plan to cover hospitalization was sold. Ten years later (1939) Blue Cross had enrolled 4,500,000, though Blue Shield ran a weak second with less than 170,000.

By 1965 150,000,000 (of 196,000,000) Americans had some form of health insurance.

This is not the time for a discussion of the many pressures being generated by a system of payment which steps between the doctor and patient, a system which must account to its policy-holders for the stewardship of their money, a system which increasingly must be concerned with utilization, with quality and with payment of reasonable fees for service.

Within the past two years we have added the 18,000,000 Americans over 65 to the insurance rolls through the federal mechanism of Social Security, and Title XIX is to be implemented in the foreseeable future to include all of the indigent. Quite plainly pressures will further develop for a *uniform* pre-paid health insurance if for no other purpose than to iron out the inequities of the many plans which will be flourishing.

We must now add another ingredient to the mix: hospital costs have risen like the bubbles in a bottle of champagne. The still quiet days of the five-dollar-a-day room were suddenly agitated by someone removing the cork. It doesn't matter much whose hands pulled the cork, though it was mainly the rising cost of labor and the sudden sophistication of modern medicine and its entourage of hardware. What does matter is that as hospital costs have risen, it has become necessary to see to it that only those who really require hospital care get admitted to our hospitals; and that once admitted they stay no longer than is necessary. When one's neighbors are footing the bill — and they all share in that dubious privilege through pre-paid insurance — those neighbors will not look kindly at me if I take a rest cure in the hospital at close to $100 a day.

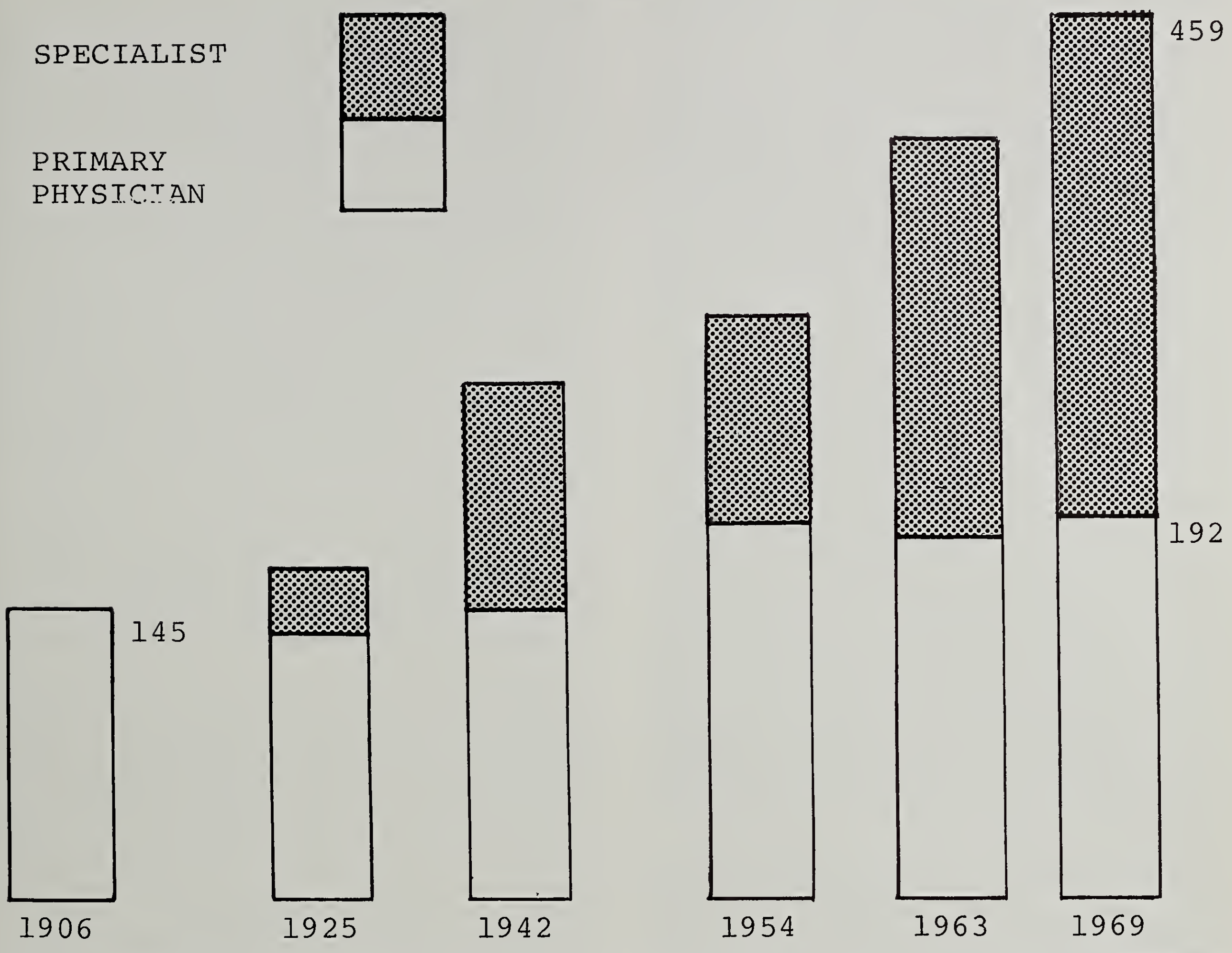
More careful utilization of inpatient facilities means an increased utilization of outpatient facilities. These, of course, are your office and mine and the outpatient facilities of hospitals.

In fact, a good many criticisms can be leveled at outpatient care.

Our offices, for instance, tend to be located near to the patients who can afford to pay us. This is no more unreasonable than it is to put a duck-blind in a marsh instead of on a mountain top. But we have tended to leave rural areas and the poverty areas of our cities less well staffed — less able to provide good outpatient care.

Emergency rooms — the urban poor's family physician — are fine for emergencies. No one, I think, would maintain that good preventive medicine is to be found there. Nor

Figure 3



DOCTORS PER 100,000 POPULATION — NEW CASTLE COUNTY

is this an atmosphere conducive to an unhurried talk with the harried mother of an adolescent on an LSD trip; or a place for well baby care; or a place to determine the cause of obscure pain in the non-surgical abdomen. Yet it is used for all these things.

The outpatient clinics of those hospitals I am familiar with are surely fair game for allegations of dehumanization of the patient, fragmentation of care, discontinuity of the doctor-patient relationship. And by and large, precious little preventive medicine has been practiced in the clinics with the notable exception of pediatric clinics.

For we are all becoming gradually aware that since the great epidemic diseases of bacterial origin have become largely controlled, our major health problems today are degenerative, metabolic and emotional in etiology. To be sure, these diseases have acute emergencies arising from time to time, but their proper care would appear to be ongoing and preventive, and most of us know that if such problems get regular attention the number of acute emergencies is decreased.

This is not to suggest that patients with chronic illness be treated regularly only to relieve a burden upon emergency room facilities. It is to suggest that — in the context of what we know today — these patients should receive ongoing, regular care because it is best for them. At least one carefully done study supports the concept that a welcome by-product will be decreased emergency room utilization.

A final change occurring in the practice of medicine is the expansion of the non-physician membership on the health team.

It is said that during World War I there were about as many physicians as there were all other trained persons in medicine combined, ie, dentists, nurses and pharmacists. The percentage of doctors has steadily decreased over the years to about 21% in 1960. Magraw says, "Of professionally trained persons in the health field today, only one in five is a physician. On the other hand, of all Americans employed in health-related occupations, only about one in sixteen is a physician." Within the hospital environment we physicians have become accustomed to working in a sort of loosely-knit team, using the paramedical skills of a spectrum of individuals running from audiologists, through psychologists, to social workers, to visiting nurses. Most of us do not yet make anything like as much use of these skilled people in our own outpatient practices. But there is good reason to think they could take over many functions being performed in his office by the physician today.

There is almost nowhere else to look for relief from the growing burden of work we are all facing, and especially those of us who are primary physicians. The population will increase; the medical schools will do well if they don't fall behind in the output of physicians; a whole new group — the poor who make up 20 to 25% of our population — expects to get and will get first rate outpatient care; the whole exploding population is going to demand more medical care. And if we are not to disappoint them and ourselves, we will increasingly want to deliver to our patients the output of the unprecedented research effort of the years since World War II.

It will come as no surprise to learn that the solution to that problem is not widely agreed upon. Some of us, however, are at work on a project which is designed to deliver medical care more conveniently and better to a section of this county which does not at the moment have a doctor, a dentist, a drug store, or even a bus operating after 5 p.m. It will be a neighborhood health center.

As you know, a good many of these have sprung up all around this country in the last two or three years. Each has its own *modus operandi.* Nearly all have sprung from the fertile loins of medical schools and very many have been totally subsidized by federal funds.

The Southbridge Health Activities Center, whose birth is expected in the summer of 1970, was conceived through the union of a dedicated group of neighborhood citizens and a small, adventuresome group of physicians. Present at the conception were the Greater Wilmington Development Corporation and the Wilmington Medical Center. These two organizations continue to serve as godparents to the enterprise.

It is necessary to abandon the biologic metaphor at this point, for nothing in Nature is quite so complex and so frustrating as the ensuing development of this gametocyte.

Initially a meeting between many neighborhood citizens, several interested doctors, members of both GWDC and WMC was held. From this meeting a small group made up of a few representatives of each original group was formed, which finally, in the summer of 1969, was incorporated as the Southbridge Medical Advisory Committee (SMAC). SMAC is a non-profit corporation of Delaware whose directors are made up of neighborhood citizens, representatives of the doctors who will practice there, and representatives of the Wilmington Medical Center.

The doctors, too, have formed into a semiformal Southbridge Medical Group, which is formal in that by-laws have been written and agreed upon, but is informal in that the bylaws have not yet been adopted. This group has had several meetings since the spring of 1968, and is currently considering the feasibility of incorporation as a group for practice in Southbridge.

The purposes of SMAC have been to provide first rate ambulatory medical care for the residents of Southbridge, to foster improved health education in the broadest sense in that same area, and to train local residents to qualify for employment in the health care industry.

The means to be employed are seen only in outline at this time. The initial professional activity will be walk-in emergency type medical care provided ten hours weekly on Monday, Tuesday, Wednesday, and Thursday evenings and Saturday mornings. Continuity of care and improved doctor-patient relationships will be fostered by having a given doctor work the same week day whenever he works.

The second service to be supplied will be daytime comprehensive health examinations. A patient who presents at evening walk-in hours will be strongly encouraged to return somewhat later, by appointment, for a full physical examination including appropriate ancillary investigations by means of clinical laboratory, x-ray, EKG, etc., where indicated.

Less clearly limned, but indispensable as early additions to service, are well baby care, obstetrical services, and psychiatric consultation.

Some subspecialty services will no doubt be more economically supplied by providing transportation of the patient to the service, either at the medical center on in the specialist's private office.

The approach to patient care is planned as a team effort. We hope that each team eventually will consist of several physicians — internists, pediatricians and general practitioners, a nurse, and a neighborhood health worker. We even dare dream that a team may someday have the part time services of a social worker and perhaps a psychologist. Impoverished populations need more medical care than affluent populations, and what is probably more important is that they lack, through long periods of non-participation, the know-how that is made up of knowledge: knowing that some diseases can be prevented rather than lived through (or even died of); knowing that an early symptom investigated may obviate later distressing, time-consuming, expensive and dangerous illness; knowing that a doctor familiar with one's background — medical, social and economic — may be able to relieve a symptom or unravel a problem by telephone; knowing whom to see and when to see them; knowing that home nursing services are available; and the thousand useful bits of know-how we take for granted in our more affluent patients. This being so, it will necessarily be more expensive to deliver good medical care to an impoverished patient than it will be to deliver the same grade of care to a suburbanite.

Where Will The Money Come From?

First, it has been clearly stated in the purposes of SMAC that no employee of the Health Center will be expected to subsidize medical care for our patients by accepting inadequate remuneration for services rendered. No Bob Cratchits in SMAC. This applies to physicians, too. And although most of the doctors who plan to work in SMAC are quite prepared to work for little or less, in practice most of us know ourselves well enough to know that the charm of charity tends to wear thin if it is worn too long. Donors are less likely to be on time than those who are reasonably repaid for their work.

Physicians then will be paid on the basis of hours worked. Patients will be charged on a fee-for-service basis. No one will be refused care for lack of ability to pay. But many will be able to pay a reasonable cash fee. Others will qualify for Medicare and Medicaid, and indeed eventually, by about 1975, all will have some means to pay.

Meanwhile the difference between income and costs will have to be subsidized. Initial grants have come from one individual and one foundation. Perhaps other such resources will be found. In addition, there are Federal monies available for particular aspects of such medical care. Nor is it beyond the realm of speculation that state, county or municipal monies may find their way to neighborhood health centers on the rather practical presumption that disease neglected today uses very large amounts of tomorrow's tax revenues, and on the rather humanistic presumption that perhaps people are at least as important as highways.

> "The man of science has learned to believe in justification, not by faith, but by verification."
> *Huxley*

HOSPITAL PRACTICE PROBLEMS, PRESENT AND PREDICTABLE

• **Practitioners should realize that most of the life of the physician is intimately bound up with that of the hospital today, for that is where the problems really are.**

Ernest C. Shortliffe. M.D.

As one examines the ramifications of the problems facing the internist in his hospital practice today and considers the problems associated with inadequate standards in both quantity and quality of physical and human resources, one is overwhelmed by the complexity of this area of deliberations. When one adds to this the complication of further fragmentation of internal medicine as a specialty, the increased and frequently non-compensated demand put on the internist's time in medical, nursing, and paramedical education, and the demands produced by the changing roles of ambulatory clinics and emergency departments, one is confronted by problems seemingly beyond solution.

In the face of this, a speaker is compelled to confine himself to a few salient points of interest and even of controversy. I do so, and cover the role of prognosticator, with the general statement that most hospital practice problems will get worse (and a lot worse) before they get any better.

The Hospital's Role Today

It is said today that "hospitals individually and collectively have evolved as the principal community locus where substantial health resources are congregated, either physically or organizationally."[1] The evidence to support this is overwhelming. If one adds to this the assertion that "hospitals, working with professional groups and with all other segments of the community, have a responsibility to commit themselves to a leadership role in achieving adequate health services for all," then one casts the hospital as at least a major instrument in the present planning and the future design and operation of most if not all health care services.

This role for the hospital as an agent of the local as well as the national community cannot be avoided even if you and I wished it to be otherwise. The hospital will have an increasingly powerful influence on not only those services traditionally considered to be within its domain, but a major impact on the patterns of practice to be followed by you, your surgical and other colleagues, and those who follow you. Moreover, the impact will be felt as much or more on the patterns of care for the ambulatory patient as those on the inpatients who have been your traditional preoccupation as far as hospital practice is concerned. A form of rapid if not revolutionary change is upon us in an explosion of hospital-based and/or hospital-managed or coordinated ambulatory diagnostic treatment and long-term health care.

Nowhere is this more succinctly pointed out than in a recent publication of the American Hospital Association entitled "*Outpatient Health Care.*" In the foreword Dr. Edwin L. Crosby asserts that:[1]

"It must be recognized that if the health needs of people are to be adequately met, more money must be spent for health care than is the case today. A flexible and viable system of providing comprehensive outpatient

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Dr. Shortliffe is Associate Medical Director, The Health Insurance of Greater New York, and former Executive Vice-President of the Wilmington Medical Center.

Adapted from a presentation to the American Society of Internal Medicine, May 1969.

care, however, will be accomplished by more efficient and effective services for the total dollars spent for health services."

AHA's Recommendations

The same document describes the hospital as "the logical organization through which to develop a system for the provision of comprehensive health care for the total community." Throughout this publication there is a compilation of points of view and summary of discussion leading to several major recommendations which are accepted as a major challenge. Among the recommendations are the following, of major importance to us today:

> (1) "Each hospital should establish a clearly identifiable mechanism for the fulfillment of its responsibilities in the provision of ambulatory services . . ."
>
> (2) "Hospitals are encouraged to experiment with various patterns of organization for ambulatory services, including hospital-based physicians, group practice (pre-paid or fee-for-service), interdisciplinary teams, expanded roles for existing personnel, and development of new types of personnel."
>
> (3) "Hospitals should be prepared and organized to serve as a source of primary health care for individuals and families who choose to use the hospital in this capacity, or who otherwise have no primary care source."
>
> (4) "Hospitals should establish a policy that assures the fullest possible involvement of all physicians on the active staff of both inpatient and outpatient services and should implement that policy through whatever administrative procedures are necessary."
>
> (5) "Hospitals should establish policies and provide suitable facilities and staff that will make outpatient services available to all segments in the community and provide the services under conditions that preserve the dignity of both patients and staff."
>
> (6) "Hospitals should organize and provide outpatient and inpatient services in such a way as to assure continuity of patient care within the hospital setting as well as continuity of care received outside the hospital."

This series of recommendations serves to identify new areas of hospital concern which, while they will have an impact on the patterns of practice of surgeons and surgical subspecialists, will bring about even greater changes in the professional lives of internists, pediatricians, obstetricians and the generalists or family physicians. Not to be forgotten are the subspecialists in medicine: the allergists, rheumatologists, cardiologists, neurologists, dermatologists, and so on. The result is that, in addition to the present problems in hospital practice, you, as internists, will be faced with new complications.

Current Problems

What are some of the current hospital practice problems which you face from day to day? How about their future? Will other problems appear?

I'm not certain that I can enumerate them all, but the following are some which I have heard about in my own particular institution:

> (1) *Inadequate allocation of beds to the Department of Medicine.*
>
> It is my opinion that this may be a problem to the internist in situations in which there is a general shortage of medical and surgical beds. In such a case there is a constant danger that, in the face of the dramatic nature of surgical emergencies, the equally dramatic needs of emergency medicine may be pushed into the background. This presents a distinct danger of gradual diminution of medical census and the withdrawal of the internist to less frustrating hospital environments. It is a dangerous situation which, if carried to its logical conclusion, could so dissipate medical talent as to lower standards on all clinical services.
>
> What I am saying is that it is now and in the future will be, necessary for a Department of Medicine (whether or not its members are full- or part-time or some of each) to stand as a cohesive, powerful voice, for

medicine is the backbone service of any good hosiptal. There is no room in this situation for the petty arguments or disagreements about full-time status. There is only room for clear acknowledgement that division of ranks and obscurity of purpose may lead to defeat for all.

(2) *Proliferation of Special Care Units with accompanying restriction of the internists' general authority.*

As we have encountered intensive care units for the patients critically ill with pulmonary, metabolic, cardiovascular, or neurological diseases, we have encountered concomitantly a positive trend to pass the detailed care of the patient over to a single expert or a team of specialists.

I see nothing but an acceleration of this pattern of hospital practice, both on the inpatient and the outpatient services. The only comment necessary is to point out the distinct benefits to the patients — a benefit similar to passing the control of the rehabilitation patient to the skilled hands of the physiatrist. As a matter of fact, most of you have learned this far ahead of your colleagues in orthopedics.

(3) *Subjection to supervision by and authority of a proliferating number of full-time people.*

The day a department made up of private practitioners moves in the direction of asking for relief from hospital demands by the appointment of full-time staff, simply geographic or otherwise, the members of the department have in effect relinquished some degree of control over departmental and individual destiny. How could it be otherwise? Indeed, who would wish it to be otherwise? For, by the very nature of full-time practice in the hospital — availability, conservation of energies, influence over nursing, social work, laboratories, x-ray departments, and all other areas of the institution, including the administration — the full-time physician has been placed in a position of power and authority, resulting from the unique nature of his position. The result is a decreased role for the part-time, noncompensated hospital doctor, ie, the private practitioner, in the patient care, educational and administrative affairs of the institution.

All of these current problems are magnified many times when one considers the new challenges laid upon the shoulders of hospitals in providing comprehensive health care to the general public, inpatient and outpatient, in the hospital and out of the hospital: a comprehensive and continuity-oriented health service role.

Internists Face a Challenge

While it is doubtful that departments of medicine will suffer much from surgical department competition for outpatient facilities (excepting perhaps in emergency departments), the challenge facing medical departments in hospitals is that, in all probability, *comprehensive outpatient and inpatient care will not and cannot be provided by other than hospital-based practitioners.* This rather overwhelming probability represents a major challenge to internists in particular for, again, *the real backbone of good medical care is the well-applied talent of the internist.*

How then, do you, in concert with your department and your hospital, proceed to attack the problem? How do you do so and retain the self-respect of the patient as well as your own? How do you do so and maintain an on-going enthusiasm for your own role as a professional?

These are some of the questions we must ask ourselves today. There are probably many others. It is only for me to say to you at this point that they are questions which must be answered. They suggest very strongly that it is time for practitioners to realize that most of the life of the physician is intimately bound up with that of the hospital today. It will be even more hospital-bound in the future.

That is where your problems really are, ie, in the hospital.

REFERENCES

1. Outpatient Health Care Report and Recommendations of a Conference on Hospital Outpatient Care. American Hospital Association, January 1969.

Highlights

MEDICARE AND MEDICAID

Statement of the American Medical Association before the House Ways and Means Committee Meeting in Executive Session, March* 11, 1970.

. . . . We will address ourselves to these subjects: Medicaid, the state-federal program for health care assistance for the medically indigent; Medicare, the federal program which finances much of the health care for those 65 years of age and over; and some general discussions with respect to the maintenance of quality and cost controls for health care.

Medicaid

Medicaid, or Title XIX of the Social Security Act, has met with a measure of success but also with severe criticism. When first enacted, it was to provide comprehensive health care for their needy and near needy, the "medically indigent" people. It was generally agreed that if the program was to achieve success, there would need to be implementation in all the states and territorial possessions; and if the program was to achieve success, there would need to be expansion of benefits and easing of requirements for eligibility. It follows then, that a mark of the success of the program would be an increasing cost to the state and to the federal government. This has been the case. Yet, this very same growth in expenditures appears to be the basis for some of the criticism we hear.

True, the growth has been uneven. The difficulty has not been with dollars from Congress. It has been more with the inability of some state legislatures to come up with adequate funds and with broad enough programs to address the need.

. . . We believe that the Title XIX program has demonstrated some weaknesses which badly need correction. It needs to be replaced by a program which will provide the single level of care which this Committee (House Ways and Means Committee) clearly intended when it enacted Public Law 89-97. It needs also to do these things: provide the Congress with a basis for reasonably predictable costs; ease the burden on the states; assure total implementation; and while maintaining a level of quality, insure that the costs of the program remain within the range of acceptability.

We recommend, to replace the present Medicaid program, a new program with specifications to meet those needs. The program would have these features:

1. Each eligible person (or family) would receive a certificate to be redeemed by a qualified health insurance company offering a health insurance policy or contract of certain basic health benefits such as hospitalization, medical care, preventive care, and diagnostic and outpatient care.
2. The premium cost for such policy or contract would be assumed by the federal government from its general revenue fund.
3. The states, freed from the expense of financing the basic costs of health care for their indigent and medically indigent residents, could provide supplementary benefits. These might include, for example, skilled nursing home care and dental services.
4. The determination that an insurance policy or contract, and the company offering same, are "qualified" would be

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* Presented by Russell B. Roth, M.D., Speaker of the AMA House of Delegates; William O. LaMotte, Jr., M.D., Chairman of the AMA Legislative Council; John R. Kernodle, M.D., AMA Board of Trustees; Richard S. Wilbur, M.D., Assistant Executive Vice President, AMA; and Bernard P. Harrison, J.D., Secretary, Council on Legislation, AMA.

made by a state agency which customarily has that authority. However, changes in the scope of benefits, and guidelines or standards to be used by the insurance departments in judging the company and the plan it offers, would be established by a national board appointed by the President.

5. All individuals and families below a certain level of income would be eligible to participate. A simple determination of eligibility could be made by the appropriate federal agency on the basis of income, or an even more refined criterion could be used such as "tax liability," which takes into account other important factors, as, for example, the number of dependents in the family. The program could require marginal needy families to participate in the expense of the premium charge by paying a small part of it, varying such participation in direct proportion to this tax liability.
6. For the lower income family there would be no deductibles and no co-insurance features.
7. To insure a high level of quality and to prevent cost escalation, the program would provide for a system of "peer review," organized and conducted in a manner to assure its success.

As to those services and charges which are within the purview of the medical profession, appropriate medical societies would be given the task of establishing a peer review mechanism that would, among other things, review individual charges and services wherever performed; review hospital and skilled nursing home admissions as to their medical necessity, and stays in hospitals and skilled nursing homes as to their continued medical necessity; and review the need for the professional services provided in the institution. The establishment and operation of such a review mechanism will have a salutary teaching effect on providers thereby cutting down on the occasional or unintentional abuse. Those whose actions are more consistent and who show a continuing pattern of abuse would be suspended for a time, or in more extreme situations, excluded from the program. This action could be taken by the Secretary of HEW upon recommendation of the peer review committee.

In the case of fraud or other clear intentional and gross misconduct, the peer review committee would be expected to bring charges before the appropriate licensing body.

To assist peer review committees in becoming established and in their operation, the program should provide for federal participation in the cost incurred in developing the program and its operation. To assure participation by members of the profession, those who serve on peer review committees should be held harmless from any actions or claims based on their decisions as to the necessity or quality of the services provided, or the reasonableness of the charge.

In the event that a peer review committee is not established by the appropriate medical society within a reasonable time, or although established is not functioning, the Secretary, in consultation with the medical society, would be empowered to appoint a committee to so act.

Medicare

Medicare, in the main, is operating satisfactorily. The rising costs of the program and the continued heavy usage of the services which the program offers, are matters of concern. But these come as no surprise since the increased cost and utilization were predictable from the beginning — and we so stated.

In the past, we have recommended to this Committee, certain changes which we believe would improve the program. These we make again: that psychiatric services be provided on the same basis as are other medical services; and that the three-day requirement for hospitalization prior to admission to an extended care facility be deleted (less costly service should be made accessible). In addition, we suggest a further incentive for the Medicare cardholder to use less costly services where such are adequate. For example, the patient could be allowed to substitute for unused ECF services, home health services without deductibles or co-insurance, say at a rate of three visits for each unused ECF day and five visits for each unused hospital day.

Other incentives could include the returning of a part of the Part B premium to the Medicare beneficiary. For example, each cardholder could be returned, on the basis of the amount of benefits not used during the preceding year, a portion of his (now $48.00, soon $63.60) annual total Part B contribution. A similar incentive could be devised for the Part A program. Here, part of the unused hospital and skilled nursing home benefit days not used in one calendar year could be carried over to some subsequent time — say a period beginning at least one year later. For example, if during 1970 a Medicare beneficiary used less than the allowed daily inpatient hospital benefit, he would be permitted to save one hospital day for each two days not used in 1970. He could use this saved-up benefit anytime after January 1, 1972.

Maintaining Quality and Holding Down Costs

On November 21, 1963, before the enactment of Medicare, speaking to this Committee, the AMA said:

> "In the years of debate and public discussion over the proposal to federalize hospital care of the aged, it has been impossible to pin down reliable estimates of the cost of the program. Individuals and agencies interested in H.R. 3920 are confronted by the problem of constantly shifting figures and murky projections of the probable demands of older people for use of medical facilities . . ."
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> ". . . We submit that on the basis of the limited data available, it is well nigh impossible for anyone, and this includes government actuaries, to make an accurate prediction of use and hence provide the nation with a true picture of the cost it faces."

On that occasion, and on other occasions before this Committee and the Senate Finance Committee, our witnesses recited over and over again the inaccuracy of cost predictions being made both by government actuaries and other proponents. We warned of the destined rise in health care expenditures and costs facing the nation after the enactment of medicare.

All efforts, yours and ours, must be directed to finding ways to meet and solve the problem of increasing health care costs, both in federally supported programs and in the private sector.

To this end, we have made certain suggestions addressed to the medicaid program, which will as well improve the whole health care picture. These include incentives for the use of less costly care (ie, home rather than hospital) and a proposal for the establishment of an effective peer review mechanism. We would offer these two additional suggestions.

The home provides a less costly setting for health services than does the hospital. Or to say it another way, ambulatory care is less costly than is institutional care. If we can, then, we should devise incentives to encourage such ambulatory care. One approach might be to allow the physician-surgeon to use his qualified clinic or "surgicenter" for minor and elective surgery where overnight hospitalization is not required. This is not an entirely new concept. One such plan is now being tried in Phoenix, Arizona, and another in Providence, Rhode Island. The incentive for the arrangement (which clearly has the potential of reducing the more costly hospital admission) would be approval of the surgical office, which is found to be qualified in accordance with regulations, as a provider under the Medicare Part A program. When part of the cost of necessary equipment and personnel is reimbursable, the surgeon would be encouraged to do more of his work outside the hospital and on an ambulatory patient basis.

Our second and remaining additional suggestion is more in the nature of a comment on the whole complex problem of maintaining high quality medical care, making quality health care readily accessible to all, and at the same time keeping the lid on costs. The most important element in this equation is manpower. Ever increasing demands for services on an already overburdened health industry continue to inflate costs. Our best answer to the problem is to quickly and drastically increase the supply of available health manpower. To this end we have urged full funding of medical and allied health education and the increase of medical and allied health student scholarships.

Further, we are currently seeking all ways in which available manpower can be more efficiently used. The concept of the physician's assistant is one which we are developing into a viable program. The Committee may wish to consider just how such a concept can fit into federally supported health programs.

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EFFECT OF WASHINGTON HEARINGS ON CONTRACEPTIVE USE

Elizabeth B. Connell, M.D., *Director of Research and Development, Family Planning Services, International Institute for the Study of Human Reproduction, Columbia University** — *OB-GYN Conference, Wilmington Medical Center, May* 1970.

A discussion of the recent hearings chaired by Senator Gaylord Nelson on "the pill" might be called, "The Pill, Past, Present and Future," or even, "The Pill, Does it Have a Future?" Since the first studies in Puerto Rico in 1956 and the introduction of "the pill" into the United States in 1960, the birth control pills (BCP) have become the major method of medically prescribed contraception in use in the United States. It has been estimated that about nine million women in the United States and 18 million women in other countries are presently taking "the pill," or were doing so until the recent hearings in Washington.

There was no new evidence introduced at the Washington hearings with the possible exception of one British study, then unpublished, which suggested an increase in coronary artery disease in women taking estrogen. However, the impression engendered by the conduct of the hearings was that there has been a long-standing conspiracy on the part of BCP research physicians, pharmaceutical houses manufacturing "the pill," doctors, and even the FDA to suppress vital information regarding dangers of the oral contraceptives.

The hearings were markedly unbalanced to such an extent as to suggest that the imbalance was deliberate. In many ways the testimony was like a bikini bathing suit; what it revealed was interesting, but what it concealed was vital. For example, no attempt was made to introduce testimony equating the risk of the pill against the risk of pregnancy or abortion, especially illegal abortion.

Nevertheless, the hearings, despite their bias, did point out the fact that medicine had better keep its store clean, not just with respect to the contraceptive pills, but in all medical matters, or the federal government will attempt to do it for us. It is possibly true that because of the tremendous efficacy and simplicity of use of oral contraceptives, they may have been overprescribed particularly in light of recent studies on thromboembolic disease in users of birth control pills. In some instances due and proper care in the prescription of BCP may not have been continuously exercised.

There has also probably been an insufficient effort, in some areas, which the effects of the hearings may reverse, to prescribe other methods of contraception such as the IUD, diaphragms, and condoms. Tubal ligations, vasectomies, and abortions, also now accepted as means of family planning, have not received sufficient attention or support.

A documentable, unfortunate effect of the hearings has been to cause many women to discontinue BCP and new patients attending contraceptive clinics to reject BCP in favor of other less certain, but to them less worrisome methods.

This is obviously a cause for concern and great thoughtfulness because the hearings, the primary purpose of which may have been political exploitation of exposure in the mass

(Continued on next page)

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*Dr. Connell is Associate Professor, Department of OB-GYN, Columbia University's College of Physicians and Surgeons.

Letters to the Editor

To the Editor:

The early treatment of venereal disease and the investigation of contacts form the cornerstone of V.D. control. The fact that reactive serological tests for syphilis were being overlooked because of clerical delays in posting such reports on the charts of hospitalized patients and the lack of physician continuity in our outpatient clinic, among other situations, led the Medical Society of Delaware to support Senate Bill 43.

See Editorial, "By Default"

It was the aim of the Society not only to insure that all reactive serological tests for syphilis and other venereal diseases were brought to the attention of either the private physician or the chief of the service in the case of service patients, but also to maintain the traditional patient-physician relationship and avoid the interposition of a third party. Even a brief review of Senate Bill 43 is sufficient to bear this out. In essence, the bill states that the State Board of Health may not approach any patient without the consent of the attending physician or the Attending Chief of the Section of the Clinic or Service concerned in the case of service cases. The State Board of Health can merely appraise those in charge of the patients in question that they have a patient who has presumptive evidence of venereal disease and offer their assistance in the realm of treatment and investigation of contacts. The physician is the final arbiter. He may assent to such help as offered or reject it, either on the basis that he will undertake these duties or that he feels the case represents a biological false positive serological test or a previously treated case. Legislation such as Senate Bill 43 has already been enacted in 29 states.*

DONALD SCHETMAN, M.D.

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*Editorial Note: Senate Bill 43 was signed into law by Governor Peterson on May 19, 1970.

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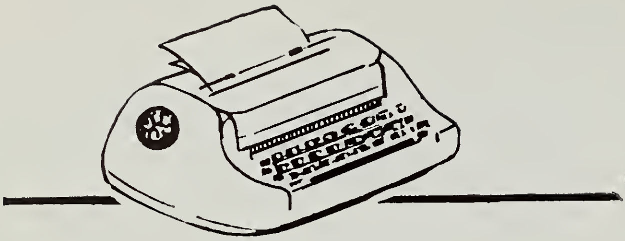
media, on such a controversial and important topic as "the pill," have resulted in a large increase of unwanted pregnancies. Although more than 70% of all new clinic patients in New York City during 1960 chose BCP, during the period of the Washington hearings and thereafter this choice decreased to well below 50%. Requests for abortion and sterilizations, both male and female, rise constantly.

Furthermore, international repercussions indicate the enormous influence of the American news media. Great international interest and importance were given to this testimony which regrettably was mainly speculative and/or based on animal data from which large scale and unjustified extrapolations to human females were made. Disenchantment with the pill is especially destructive in many nations such as those in Central and South America, where the facilities for prenatal and obstetrical care are overburdened and where increased pregnancies mean not inconvenience, but increased morbidity and mortality, and probably greater numbers of deaths from illegal abortions.

Perhaps the hearings will result in better patient care in some instances for women receiving BCP. Perhaps there will now be an increased status for the field of contraception and contraceptive research. However, they also undoubtedly discouraged research by the pharmaceutical companies already unhappy about FDA restriction of BCP studies and the high cost of new drug applications. There is reason to estimate that as many as 100,000 unplanned pregnancies in the United States may result in 1970 from the terrified and abrupt abandonment of the BCP occasioned by the hearings.

The overall effect of the hearings, therefore, seems to have been a negative one; the damage was profound and continues. As yet the gains still lag far behind the losses.



Special Reports

ON KEOGH AND INCORPORATING

The recent stock market declines have demonstrated that investment is a two-way street. If it were not so, we might all be rich! The Society's participation in PRO Fund, Inc. has shown a decline. Perhaps everything in life is relative, and on this basis PRO Fund has declined relatively less. In fact it ranged fourth in the Doctor Funds in 1969. Its price as of July 1, 1970 was $7.51. According to Medical Economics, PRO Fund lost 0.7% in 1969. The usual investment plan calls for periodic contributions. This dollar averaging tends to even out the peaks and valleys of market fluctuations. Those members who choose to invest a portion in life insurance are affected less by the fluctuations of the stock market but experience the erosions of inflation to a greater extent. At the present time 120 members and 80 employees participate in this plan.

Many specialty groups have incorporated, and others are considering this route. The PRO Services offer this service in addition to the Keogh plan, and conversion from Keogh to incorporation is feasible. The PRO Master Plan for Professional Corporation is provided in conjunction with the Bank of Delaware.

However, incorporation of a medical practice is not necessarily the answer to one's financial problems, any more than marriage is the answer to a single person's dilemma. In fact, incorporation may be likened to marriage, for one must be able to get along with the other shareholders. In addition, withdrawing from a corporation is not as simple as it is in a partnership. The participant must realize that he will take home less spendable income — perhaps 20% less. Many doctors are "cash poor" with children to be educated, mortgages and other obligations to meet, and this will only aggravate the problem. The most important question to honestly answer to yourself before incorporation is "Can I get along with less income?"

The inclusion of your employees further reduces your take home income. There is a cost to incorporation including incorporation filing fees, trustee fees, attorney fees, accountant fees and other charges estimated upwards of $2000.

The procurement of qualified tax lawyers, accountants and possibly professional management consultants is extremely important. This talent is not inexpensive but may well prove to be the key to successful approval by the IRS. Your practice must be conducted in a corporate manner. This may involve basic changes in habit, procedures and relationships to provide strict adherence to the corporate form. Such corporate details as minutes of regularly scheduled meetings and attention to such minutiae as bank accounts, billing, letterheads, payments, etc. to the corporate name are necessary. This is certainly no "do it yourself" operation.

Lastly, unless your net income is $40,000 yearly, incorporation hardly seems worthwhile. This is due to the fact that the tax benefits and returns on the compounded tax-free invested funds increase almost by geometrical proportions. Thus, one must be in a high enough tax bracket to provide the tax savings to justify the incorporation.

Should the allowable Keogh contribution be doubled to $5000 yearly, as has been discussed in Congress, incorporation becomes even less attractive to the vast majority of physicians. Further, since the new tax law passed by Congress provides that after 1971, the tax

(Continued on next page)

EARLY DELAWARE PHYSICIANS

V NATHANIEL LUFF, Delaware Physician during the Revolutionary Period, 1776-1787.

Dr. Nathaniel Luff, who crossed the Delaware River with Washington, gave up the practice of medicine to become a prominent member of the Quakers. He was born in St. Jones Neck in Kent County, April 23, 1756, descendant of a family that had received a Delaware grant from William Penn. Nathaniel was brought up as an Episcopalian, and his education was started in Dover under the Reverend Charles Inglis, afterwards Episcopal bishop of Nova Scotia. Luff later studied medicine in Philadelphia.

When the Revolution broke out he was offered the post of surgeon in a battalion from Chester, Pennsylvania, under the com mand of Col. Hugh Lloyd. While that battalion was stationed in Philadelphia, he continued to attend lectures by Dr. Benjamin Rush, physician and signer of the Declaration of Independence. Later he became surgeon of the First Battalion of Philadelphia, a unit composed of the sons of men of property or of the silk stocking gentry. He was with them when Washington crossed the Delaware on December 25, 1776, and he took part in the Battle of Trenton. Later the term of service of that battalion expired, and he was again free. He sought out Caesar Rodney, Delaware's representative in the Continental Congress, who advised him to return to his native state where there was a great need for doctors.

He settled south of Dover and married Mary Fisher, a devout Quaker, who soon converted him to that religion. Luff was not happy in his profession because his patients were so poor they could pay him only through barter. He was well thought of by other physicians and was one of the founders of the Medical Society of Delaware in 1789, which elected him censor of the society. Finally he became disgusted with the life of a physician and resigned all offices in the society, saying that its principal object was not the advancement of medical science but the acquisition "of loaves and fishes." This did not endear him to his colleagues.

He tried farming on Mispillion Creek, but he did not succeed at that. Then he moved to Frederica and again started practicing medicine. He made out no better there, and after another fling at farming in St. Jones Neck, he moved to Wilmington where his wife died. Later he married Lydia Boon of Frederica, a widow, and from that time on devoted his entire time to Quaker meetings, traveling extensively through the Delmarva Peninsula and in Pennsylvania. Although a prominent member of the sect he was not a forceful speaker and never held any office in any of the Quaker assemblies. He died January 21, 1806, in Frederica.

Adapted from *Forgotten Heroes of Delaware* by W. E. Wilson, available from Deltos Press, Box 313, Cambridge, Mass., at $2.95 paper, $5.95 library buckram.

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SPECIAL REPORT — Continued

cannot be greater than 50% on earned income, the tax savings previously provided by incorporation may not look quite as attractive as before. There is even some talk of increasing retirement contributions to 40% of income up to a maximum of $10,000. It is noteworthy, now that enabling legislation and court decisions have paved the way, that the rush to incorporate has not been as great as expected.

Davis G. Durham, M.D.

Dr. Durham is Chairman of the Medical Economics Committee of the Medical Society of Delaware.

Editorials

WHO SHALL LIVE?

Do you have a "hang-up" about abortions? Are you torn between the feeling that abortion is morally wrong, and the feeling that the birth of an unwanted child is also morally unacceptable? Physicians have been dedicated over the centuries to the preservation of life. Our years of training have enabled us to prevent disease, diagnose and cure illness, and alleviate suffering, with the sole purpose of preserving that most precious commodity, human life. Our efforts are directed toward extending the life span, making humans more productive through better nutrition, more healthful environment, less suffering, and decreasing the infant and fetal wastage. How can we then bring ourselves to endorse a doctrine of "snuffing out life" before it has a chance to begin? Who knows which one of those precious fetuses might have become an Edison or an Einstein? I have suffered through these philosophical and often emotional agonies, as I am sure many of my colleagues have done these past months, as the issue of abortion comes more and more to the forefront in the news, in the legislative process, and in private debate. For those of you who are still in doubt on which side of the fence you belong, I strongly urge that you read the report of the American Friends Service Committee called "*Who Shall Live? Man's Control over Birth and Death.*"[1] This report, prepared by a group of physicians, philosophers, teachers, and social workers, gives insight into the frightening problem of the population explosion, the dreadful consequences that our children will face if this continues, and the alternatives presently available, if man is to survive and maintain a decent standard of living in the future.

This impressive group of scholars has brought into focus the problem, the alternative solutions, and the horrible consequences of a "laissez-faire" attitude which I am afraid many of us are tempted to adopt, because of our previous training and dedication, albeit praiseworthy, to the "preservation of life."

Before reading this book, I was convinced that the best approach to the problem of birth control and the idea of Zero Population Growth was through the voluntary use of contraceptives. This seemed to me to be the most humane approach, and one that did not smack of "murder," as our Catholic friends view abortion. The concept that life begins with the fertilization of the egg is one that I cannot deny, although the Friends Committee is somewhat vague on this issue. Nevertheless, they develop an argument, eminently documented, that the voluntary use of contraceptives "even if such help were available free to the entire population, rich and poor alike, this alone would not solve the population problem."[1]

What are the alternatives? Abortion, infanticide, governmental control of conception, or "God's will"? Of these alternatives, I feel they make an excellent case for abortion.

I certainly prefer abortion to infanticide, as I am sure most anybody would. Government control? Surely the impersonal imposition of such control would have problems distinguishing between the "wanted" and "unwanted" babies. As to "God's will," the natural selection process looks grim. Will "God's will" mean starvation for millions of people, cannibalism, infanticide, or nuclear warfare? The alternatives are many, none attractive. The "laissez-faire" attitude will undoubtedly lead to one of these horrible alternatives. Thus, the most humane alternative remains that of abortion. If my arguments have not convinced you, I urge you to read this monograph, whether you are Protestant, Catholic, Jew, or of another religion. Their argument is not entirely based on the Quaker religion; it is a philosophical dissertation, based on the need for man to recognize his problem of excess growth, limited food supply, pollution of his environment, and the preservation of the quality of life, which physicians have strived to attain over the centuries.

MARJORIE J. MCKUSICK, M.D.

[1] Wang and Hill, New York, 1970.

CEPHALOGLYCIN — A NEW ANTIBIOTIC FOR URINARY TRACT INFECTIONS

Cephaloglycin,* a phenylgycine analogue of the antibiotic cephalothin, is the first oral cephalosporin antibiotic to become available for general use. This new antibiotic is satisfactorily absorbed after oral administration and produces detectable levels in the serum and excellent levels in the urine when administered in doses of 250 to 500 mgm. The absorption of cephaloglycin from the intestinal tract is not interfered with by the ingestion of food, and the excretion of the antibiotic by the kidney is inhibited by prebenecid. Though cephaloglycin has been utilized for the treatment of a limited number of patients with systemic infection, the antibiotic is recommended for use only in the treatment of urinary tract infections.

Cephaloglycin shares the broad spectrum of the other cephalosporin antibiotics (cephalothin and cephaloridine) and is effective against a number of gram-positive and gram-negative microorganisms. In the urinary tract it is particularly effective against strains of *Escherichia coli,* indole-negative strains of *Proteus,* non-motile strains of *Klebsiella* and strains of *Staphylococcus aureus.* This antibacterial agent is less effective against strains of enterococcus and totally without effect against strains of *Pseudomonas aeruginosa.* If one disregards strains of pseudomonas and serratia, over 90% of the urinary pathogens are inhibited by levels of cephaloglycin which are obtainable in the urine.

In one study, the high recurrence rate of infection after apparent eradication by cephaloglycin suggested to the authors that this antibiotic was bacteriostatic in its action against the gram-negative pathogens. However, by the usual *in vitro* criteria for determination of bactericidal and bacteriostatic effect, this antibiotic appears to be bactericidal as are the other cephalosporins against the gram-negative organisms.

Cephaloglycin, as the dihydrate, is administered by mouth in doses of 250 to 500 mgm every six hours. The selection of the proper dosage will depend upon the severity of the illness and the nature of the infecting microorganism. For sensitive microorganisms in patients with asymptomatic bacteriuria and cystitis, 250 mgm given every six hours for a period of ten to fourteen days should be adequate. Patients with pyelonephritis and patients infected with less sensitive microorganisms should be given a dosage of 500 mgm on a six-hour schedule.

In patients who have impaired renal function, one should be aware of the possible necessity of adjusting the dosage of cephaloglycin. Serum levels obtained in uremic patients receiving cephaloglycin appeared to be somewhat higher than those obtained in nonuremic patients. However, even with prolonged dosing in patients with elevated blood urea nitrogens, there appeared to be little accumulation of the drug in the serum. It should be noted that in one uremic patient, there was no measurable cephaloglycin in the urine of the patient during treatment. The positive Coombs Test phenomenon, which appears to develop in some patients receiving large doses of cephalothin, has not been seen in patients receiving cephaloglycin.

The major drawback to therapy with cephaloglycin has been the high incidence of side effects resulting from the administration of this antibiotic. In some studies, side effects have occurred in more than 30% of the patients treated. The side effects have been primarily gastrointestinal, consisting of nausea, vomiting and most often diarrhea. Occasional drug eruptions have been reported.

From the experience to date with this antibiotic, it would appear that cephaloglycin is not a first line drug for the treatment of urinary tract infection. It does not appear to have any significant advantages over the sulfonamides, tetracyclines and other antibacterial agents currently available for the treatment of urinary tract infections. Rather, the proper role of cephaloglycin would appear to be as a selective agent to be used in treating patients who are infected with organisms resistant to the more frequently used antibacterial agents. It is anticipated that additional oral cephalosporin antibiotics will become available in the next few years. Cephalexin, a disacetyl derivative of cephaloglycin which has less antimicrobial activity but better absorption from the gastrointestinal tract, has already had extensive clinical trial in a variety of infections.

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*Kafocin (Eli Lilly and Company)

W.J.H.

REFERENCES

1. Boyer JL and Andriole VT: Laboratory and clinical studies of a new antibiotic, cephaloglycin in the treatment of urinary tract infections. Yale J Biol Med 40:284, 1968.
2. Hogan LB Jr, Holloway WJ and Jakubowitch RA: Clinical experience with cephaloglycin. Antimicrobial Agents and Chemotherapy, 1967.
3. Ronald AR, Kind AC and Turck M: Cephaloglycin in infections of the urinary tract. Arch Int Med 121-139, 1968.

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(DR.) TILTON PARK

Several months ago we printed a letter from Dr. Lewis B. Flinn[1] in which he reviewed the history of Dr. James Tilton and recommended that the periodic arguments to name the 8th Street Park for this early great physician be resolved in Tilton's favor. To our pleasure, the Wilmington Journal reprinted Dr. Flinn's letter and supported his sentiments that Dr. Tilton indeed deserved memorializing in the park on the site of his former estate, an estate which might have become the capital of the newly formed United States had his generous offer been accepted.

Wilmington City Council just recently took its final vote on naming the park. Despite some vocal opposing factions who were lobbying for their favorite ancestor, the Tilton supporters won and (Dr.) Tilton Park it shall be. We cannot be sure how influential Dr. Flinn's letter to this Journal and its subsequent reprinting in the other were in achieving this end. We think it probably helped a great deal, reminding us once again that "a paper thin voice can be a powerful persuader."

B.Z.P.

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[1] See the Delaware Medical Journal, March 1970, p. 79.

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BY DEFAULT

See Letter to the Editor, page 213

Commencing July 1, 1970, Delaware physicians may be surprised to receive a telephone call or a visit from a member of the State's Division of Physical Health inquiring about a patient identified either by name or number, who has "presumptive evidence significant of venereal disease." Senate Bill 43, enacted into law July 1, 1970, requires that all laboratory findings showing presumptive evidence of venereal disease be reported by the laboratory on a weekly basis to the State Board of Health. This law is unfortunate in that it introduces a third party between the physician and his patient. It is all the more unfortunate since the Delaware Code already provided for venereal disease case reporting in a manner which, in this writer's opinion, is adequate — with one proviso — the un-amended code required that notification of proven venereal disease cases be done by the patient's physician. Herein lies the rub: the evidence is that this was not being done effectively, thus hampering the health department in its program of tracing contacts. It is unfortunate that now all "presumptive" tests such as VDRL, which will include many biological false positives, as well as definitive findings such as positive cultures and dark field examinations, will henceforth be reported. Because of our default, authority has intervened in the traditional patient-physician relationship. *J.W.A.*

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IN A THREATENED SOCIETY . . .

In a society whose stability is threatened at the community level, it is obviously necessary for us to reestablish the patient and his family as a target of relevant primary medicine. . . . It is within the family milieu . . . and very early in life . . . that we find the genesis of social or anti-social human behavior, mental health or mental illness, many communicable diseases, and the nutritional and other factors that ultimately lead to many of the chronic degenerative and disabling disorders of later life.

James Dennis, M.D., Dean of the U. of Oklahoma School of Medicine. From a speech before the American Society of University Otolaryngologists, March, 1969.

President's Page

DOES A PATIENT HAVE TO BE IN THE HOSPITAL BEFORE HE CAN GO ON HOME CARE?

The President's Page this month was written by William H. Duncan, M.D., Director of Ambulatory Services, Wilmington Medical Center.

One of the questions frequently asked about the Wilmington Medical Center Home Care program is whether the patient must have been hospitalized before he is eligible for service. Patients can be admitted to Home Care who have never been hospitalized. In reality, there are only two requirements for service: the patient must require several kinds of service, not just one or two, and there must be a physician, either private or clinic, who will follow the patient on the Home Care program. There have been no physicians on the Home Care Staff for the last several years.

In 1969 nearly 20% of the Wilmington Medical Center Home Care referrals were patients who had not recently been in the hospital. Admittedly, under Medicare, these patients receive only 80% coverage instead of 100%, but the Blue Cross policies for people under 65 have just as complete coverage whether or not the person has been hospitalized.

A full range of ancillary services can be provided the patient at home, these perhaps preventing or delaying hospitalization. Services include laboratory, oxygen, catheters and other supplies, medicines, skilled part-time nursing care, Home Health Aides, physical therapy, and occupational therapy. One of the most important aspects of Home Care service is less tangible: that of providing a bridge between the patient's care if he is in an institution and the care he will receive at home. Many times the family is willing and able to care for the patient, but they do not know how, and since most people do not learn something the first time they are shown, they need to be worked with for a period of time.

Many times patients, particularly elderly ones, thrive at home and are less disoriented than in an institution. Through Home Care, the patient's care at home can be coordinated and everyone involved with the patient kept informed of new developments, of laboratory tests, and of changes in the patient's condition.

Too many physicians are unaware of Home Care and therefore patients who might benefit from being on the program are being denied the extended aid to which they are entitled, not the least important aspect of this being a cost per day of $11.50 on the Home Care program as compared to $89 per day inpatient care.

Of the 55 patients currently on Wilmington Medical Center's Home Care program, 41 are private patients who were referred by 26 physicians. Thirteen of these physicians are in general practice, eight in internal medicine, two in orthopedics, one in gaastroenterology, one in physical medicine, and one in neurology.

Where are the rest of you?

Henry H Stroud

Delaware Academy of General Practice

FALL SEMINAR PROGRAM

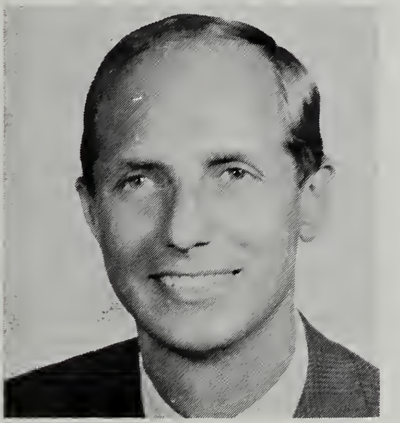
The Fall Seminar for 1970 consists of refresher courses taught by physicians of the Wilmington Medical Center and will be held in the Nurses' Auditorium at the Wilmington General Division. It is intended to help prepare general practitioners for the Family Practice Board Examination to be given in 1971. Identical programs will be given on Wednesdays and Thursdays from 1 to 4 p.m. for 10 weeks. Approved for 30 hours' AAGP credit.

	Wednesday
Sept. 2	Cardiovascular Disease incl. ECG *A. Henry Clagett, Jr., M.D.*
Sept. 9	Hematology *John J. Egan, M.D.* Infectious Diseases; Antibiotics *William J. Holloway, M.D.*
Sept. 16	Gastroenterology *Alfred Lazarus, M.D.* Pulmonary Disease *Leonard P. Lang, M.D.*
Sept. 23	Renal Disease *Robert B. Flinn, M.D.* Endocrine Disease *Bernadine Z. Paulshock, M.D.*
Sept. 30	Pediatric Allergy *Charles L. Miller, M.D.* Pediatrics *Warren R. Johnson, M.D.*
Oct. 7	Fluid Bal. — Infants & Children *Herman Rosenblum, M.D.* Pediatrics *David A. Levitsky, M.D.*
Oct. 14	Obstetrics-Gynecology *Marvin V. Andersen, Jr., M.D.* Obstetrics-Gynecology *Morton Keyser, M.D.*
Oct. 21	Surgery *Harold S. Rafal, M.D.* Surgery *Carl I. Glassman, M.D.*
Oct. 28	Pathology *Joseph V. Casella, M.D.* Radiology *Olin S. Allen, II, M.D.*
Nov. 4	Neurology *Thomas S. Vates, M.D.* Psychiatry *Jerome Kay, M.D.*

	Thursday
Sept. 3	Endocrine Disease *Bernadine Z. Paulshock, M.D.* Infectious Diseases; Antibiotics *William J. Holloway, M.D.*
Sept. 10	Renal Disease *Robert B. Flinn, M.D.* Hematology *John J. Egan, M.D.*
Sept. 17	Cardiovascular Disease incl. ECG *A. Henry Clagett, Jr., M.D.*
Sept. 24	Gastroenterology *Alfred Lazarus, M.D.* Pulmonary Disease *Leonard P. Lang, M.D.*
Oct. 1	Pediatric Allergy *Charles L. Miller, M.D.* Pediatrics *Warren R. Johnson, M.D.*
Oct. 8	Fluid Bal. — Infants & Children *Herman Rosenblum, M.D.* Pediatrics *Warren R. Johnson, M.D.*
Oct. 15	Surgery *Carl I. Glassman, M.D.* Surgery *Harold S. Rafal, M.D.*
Oct. 22	Obstetrics - Gynecology *Morton Keyser, M.D.* Obstetrics - Gynecology *Marvin V. Andersen, Jr., M.D.*
Oct. 29	Psychiatry *Jerome Kay, M.D.* Neurology *Thomas S. Vates, M.D.*
Nov. 5	Pathology *Joseph V. Casella, M.D.* Radiology *Olin S. Allen, II, M.D.*

New Members

Peter V. Martin, M.D., Hahnemann Medical College, '47, is a native of Philadelphia. He served residencies in surgery at Hahnemann Hospital and in Colon and Rectal Surgery at Temple University Hospital. Dr. Martin was previously Senior Attending Surgeon, Allentown Hospital, Pa., and has recently been made Clinical Assistant Professor, Temple University, Philadelphia. Delaware license: 1969. Specialty: Colon and Rectal Surgery. Office: Professional Building, Wilmington. Dr. Martin and his wife have two daughters.



Karl A. Semlak, M.D., University of Pittsburgh Medical School, '64, was born in Yugoslavia. After an internship at the Delaware Hospital in Wilmington (now Delaware Division, Wilmington Medical Center) he served his residency at the University of Pittsburgh Hospital. Delaware license: 1968. Specialty: Orthopedics. Office: 325 E. Main Street, Newark. Dr. Semlak is married and resides at 1301 N. Harrison Street, Wilmington.

Hunter Marsden Addis, D.O., Philadelphia College of Osteopathic Medicine, '59, was born in Phoenixville, Pennsylvania. Delaware license: 1960. Specialty: General Practice. Office: 3037 Ogletown Road, Newark. Dr. Addis is married and has four children. He and his wife enjoy collecting antiques for their residence in West Grove, Pennsylvania. Fox hunting and duck hunting are additional interests of Dr. Addis.

Harvey E. Mast, M.D., Medical College of Virginia, '63, was born in Greenwood, Delaware. He served his internship at Petersburg General Hospital, Petersburg, Virginia, and served as a missionary physician in British Hondoras, C.A. Delaware license: 1968. Specialty: General Practice. Office: 509 Lakeview Ave., Milford, Delaware. Dr. Mast, his wife and two sons live in Greenwood, Delaware.

In Brief

Annual Meeting Medical Society of Delaware

The 181st Annual Meeting of the Medical Society of Delaware will be held in Wilmington at the Delaware Academy of Medicine on Saturday, October 17th. The House of Delegates will meet the previous day at 4:30 at the University and Whist Club, 805 N. Broom Street. The line-up of speakers for Saturday's Socio-Scientific Session includes *Horace Cotton*, an expert on Group Practice and an Editorial Consultant for *Medical Economics; George R. Dunlop, M.D.*, President, Massachusetts Blue Shield; *Walter C. Bornemeier, M.D.*, President, American Medical Association; *Alister Brass, M.D.*, Senior Editor, Journal of the American Medical Association; and *Alton Ochsner, M.D.*, Senior Consultant, the Ochsner Clinic, New Orleans, Louisiana. The Annual Dinner Dance will be held on Saturday night at the Wilmington Country Club.

Speakers on "Ask the Doctor"

Speakers for September, 1970 on the Tuesday radio program (11:05 a.m. WDEL) produced by the Medical Society of Delaware are: September 1, Harold S. Rafal, M.D., *The Lump in the Breast;* September 8, Seymour Goldstein, M.D., *Therapeutic Abortions;* September 15, John J. Reinhard, Jr., M.D., *Carcinoma of the Lung;* September 22, Ronald Corbalis, M.D., *Emergency Medical Care;* September 29, Donald H. McGee, M.D., *Pediatric Immunization.*

Smoking and Health

The Delaware Interagency Council on Smoking and Health will hold a Smoker's Withdrawal Clinic from October 5-12, 1970, at the Academy of Medicine. A $5.00 registration fee is required, but two people in the same family can come for the price of one. This is an excellent opportunity for doctors to help their patients stop smoking. For more information call 654-6267.

Free MEDLARS Service

The National Library of Medicine's computerized information retrieval system, MEDLARS, is being provided as a free service by the Mid-Eastern Regional Library to all health personnel in the region.

If you are searching for a case of arteriosclerotic pulmonary embolism occurring in a patient with aortic aneurysm, or perhaps for methods of establishing a computerized diagnostic laboratory, or the effect of housing characteristics on the incidence of disease, this reference tool is available. The Medical Society of Delaware has a sample form for those interested. For further information, contact: MEDLARS Formulation Center, Mid-Eastern Regional Medical Library, College of Physicians of Philadelphia, 19 South 22nd Street, Philadelphia, Pa., 19103.

American College of Sports Medicine

The American College of Sports Medicine is a unique professional organization of physicians, basic scientists, and educators who share an interest and a concern for the many facets of sports medicine. Currently, there are more than 1300 members of whom more than 600 are physicians. If you are interested in securing further information, contact the office of the Medical Society of Delaware.

Heart and Lung News

An explanation for the disappointing results obtained with the heart stimulant, *glucagon,* in the treatment of patients with chronic heart failure was provided recently by three physicians of the Cardiology Branch, National Heart and Lung Institute, NIH. Their studies indicate that although *glucagon* substantially improves the pumping performance of normal or nearly normal hearts, it does not benefit failing ones.

A hormone from the pancreas, *glucagon's* chief physiological function appears to be the mobilization of metabolic fuels as needed to meet the energy requirements of the body's organs and tissues. The hormone stimulates the breakdown of glycogen, the complex carbohydrate stored in liver and muscle, to yield glucose; and stimulates the breakdown of triglyceride (neutral fat) stored in adipose tissues, to yield free fatty acids that sustain the organism during periods of fasting.

Glucagon does not work, the NHLI scientists report, because it cannot increase the production of a substance called cyclic-AMP in the failing heart. The enzymatic machinery for producing cyclic-AMP is still present in the failing heart — and it responds to other cardiac stimulants, such as norepinephrine — but not to *glucagon.*

The Month in Washington

The National Communicable Disease Center of the U.S. Public Health Service stated that not a single death from polio was reported in the nation last year — a "first" since 1955 when regular polio surveillance was started. In addition, the total number of cases of paralytic polio was only 19.

Among the 19 paralytic cases last year, only one occurred in a person who had received a full series of anti-polio doses. This exception was a two-year-old suffering from an inborn inability to form protective antibodies against bacteria and viruses.

CLINICAL NOTICES AND MEETINGS

ACP Courses

The American College of Physicians announces the following courses: *Dermatological Diagnosis and Treatment for the Internist* to be held September 1-3, 1970, at the University of Maryland School of Medicine, Baltimore; *Renal Diseases: Pathophysiology, Diagnosis and Management* to be held September 9-11, 1970, at Mayo Clinic and Mayo Graduate School of Medicine, Rochester, Minnesota; and *Advances in Internal Medicine* to be held September 14-18, 1970, at the University of California, San Francisco. For further information write: Edward C. Rosenow, Jr., M.D., Executive Director, American College of Physicians, 4200 Pine Street, Philadelphia, Pa., 19104.

DC Assembly

Members of the Medical Society of Delaware are invited to attend the 1970 Scientific Assembly of the Medical Society of the District of Columbia on September 9-11, 1970, at the Washington-Hilton Hotel.

Educational Course

A continuation course on *Current Practice of Clinical Electroencephalography* will be held September 14-16, 1970, in Washington, D. C. The course is designed to review the principal applications of the EEG to clinical medical practice, and is sponsored by the American Electroencephalographic Society. For information write: Dr. Donald W. Klass, EEG Course Director, Mayo Clinic, Rochester, Minn., 55901.

EEG Society Scientific Session

The American EEG Society announces that the 1970 Meeting will be held in Washington, D.C. at the Shoreham Hotel, September 17-19, 1970. For further information write: Philip T. White, M.D., Secretary, American Electroencephalographic Society, Marquette School of Medicine, 8700 West Wisconsin Avenue, Milwaukee, Wisconsin, 53226.

Medical Ethics

The AMA announces the Third National Congress on Medical Ethics to be held on September 19-20, 1970, at the Ambassador West Hotel, 1300 North State Parkway, Chicago, Illinois.

Otolaryngologic Assembly

The Annual Otolaryngologic Assembly of 1970 will be held September 19-25, 1970, in the Eye and Ear Infirmary of the University of Illinois Hospital. The Department of Otolaryngology, College of Medicine, University of Illinois at the Medical Center, offers a condensed postgraduate basic and clinical program for practicing otolaryngologists, designed to bring to specialists current information in medical and surgical otorhinolaryngology. Interested otolaryngologists should direct their inquiries to: Otolaryngology, P. O. Box 6998, Chicago, Illinois, 60680.

Coronary Artery Evaluation

The 1970 Symposium, *Surgery and the Coronary Artery — An Evaluation,* will be presented at Valhalla Hall, Wisconsin State University, La Crosse, Wisconsin, September 23, 1970.

Birth Defects Conference

A Conference on *Clinical Management of Birth Defects* sponsored by The National Foundation-March of Dimes and The Johns Hopkins Hospital Birth Defects Treatment Center will be held September 25, 1970, at The Johns Hopkins Hospital. The Conference will emphasize the comprehensive approach to the child with birth defects. For information write: Mrs. Verna Klein, Birth Defects Center, The Johns Hopkins Hospital, Baltimore, Md., 21205.

PG Course

Louisiana State University School of Medicine in Shreveport and the Louisiana Thoracic Society will present a one-day Postgraduate Course on *Pediatric Respiratory Disease* on September 24, 1970. Interested physicians may contact the Louisiana Thoracic Society, Suite 504, Ricou-Brewster Building, Shreveport, La., 71101.

AAGP Assembly

The 22nd Annual Scientific Assembly of the American Academy of General Practice will be held September 28-October 1, 1970, in San Francisco. The 60-topic program will help the family doctor keep abreast his many-faceted profession. The Maryland Academy of General Practice has arranged a charter flight to the convention. If interested contact Dorothy E. Hohman, Executive Secretary, Maryland Academy of General Practice, 8523 Loch Raven Boulevard, Baltimore 21204. Following the Assembly those attending are invited to go to Hawaii, Australia, New Zealand and the Orient. Make your reservations!

Hypnosis Workshop

Workshops in clinical hypnosis for physicians will be offered by the Society for Clinical & Experimental Hypnosis October 27-30, 1970, in conjunction with its 22nd Annual Scientific Meeting, Holiday Inn, City Line Ave. (Rt. 1), Phila., Pa. The workshops are designed to provide the participant with an opportunity to learn the hypnosis techniques and apply them in the context of his own professional activities. Accredited for 30 hours by A.A.G.P. Fee: $120.00 which includes three working lunches. For further information, contact Martin T. Orne, M.D., Ph.D., Program Chairman, 111 N. 49th Street, Philadelphia, Pa., 19139.

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OPHTHALMOLOGIST: Currently a Fellow in neuro-ophthalmology at the University of Michigan Medical Center. Plans to take written specialty Boards in January, 1971. Interested in practice beginning in March or April, 1971.

THE FORUM

Environment And Health

MYCOPLASMA PNEUMONIAE

William J. Holloway, M.D.

Microorganisms of the genus mycoplasma are the smallest known free living agent to cause infection in humans. Animal infections due to these microorganisms have been recognized for more than half a century. The fact that mycoplasma could be isolated from material of human origin has been recognized for a number of years, but it had always been believed that these were commensal organisms in humans and not pathogens. The recognition ten years ago that *Mycoplasma pneumoniae* (Eaton agent) was the causative agent of primary atypical pneumonia in man was one of the most exciting discoveries in the field of infectious diseases in the latter half of the twentieth century. *Mycoplasma pneumoniae* is known to cause several clinical syndromes in man, including pneumonia, meningoencephalitis, Guillian-Barré syndrome, pleurisy, and pericarditis. This microorganism which has a propensity for infecting young adults and children is also thought to be a cause of otitis media in the pediatric age group.

Other strains of mycoplasma are now suspect as the possible cause of various disease states in man. Of particular interest in this regard is the suspicion that the so-called T-strain mycoplasma might be the cause of non-specific urethritis in males and habitual abortion in females.

Epidemics of *Mycoplasma pneumoniae* pneumonia have been reported from military recruit camps and from various geographical areas in the north temperate zone throughout the world. An outbreak of this type of pneumonia occurred in Wilmington in the late summer, fall and winter of 1969. The pneumonia was characterized by persistent cough, fever, lethargy and weakness. The physical findings were minimal, and x-ray examination revealed a patchy pneumonitis. Twenty-six of the 75 patients studied were found to have infection due to *Mycoplasma pneumoniae* as confirmed by culture or complement fixation titer. All of the patients had some degree of pulmonary involvement, and in one patient this was complicated by Guillian-Barré syndrome while one patient had pericarditis with effusion. The outbreak appeared to come to an end in December of 1969 concurrent with the onset of a confirmed epidemic of Hong Kong A2 influenza.

Since the studies required to confirm the presence of *Mycoplasma pneumoniae* pneumonia can not be obtained in all patients, it is important to establish the presence of this type of infection in the community at any given period of time. Consequently, the Mycoplasma Laboratory which is a part of the Infectious Disease Research Laboratory of the Wilmington Medical Center performs a valuable service in detecting the presence of this type of infection. This surveillance can only be continued with the cooperation of the physicians throughout the State of Delaware. In addition to the study of respiratory infections due to mycoplasma, the Mycoplasma Laboratory is involved in studies of T-strains of mycoplasma as causative factors in infection in the genitourinary tract.

Dr. Holloway is Director of the Infectious Disease Research Laboratory, Wilmington Medical Center.

This page is sponsored by the Delaware Tuberculosis and Health Society.

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Medical Journal

SEPTEMBER, 1970
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RADIOISOTOPE SCANNING IN THE MANAGEMENT OF BENIGN THYROID DISEASE

• Rational management of thyroid disorders demands a knowledge of the functional state of the gland as a whole and of nodules in particular. By means of radioisotope scanning, in conjunction with measurement of overall iodine uptake and sometimes utilizing suppresson and stimulation testing, an intelligent choice of surgical versus medical versus ^{131}I therapy can usually be made.

N. David Charkes, M.D.

In evaluating nodular goiter, it is important to understand that the appearance of the conventional frontal scan of the thyroid gland is dependent upon the location of the nodule in relationship to the thyroid lobes, specifically whether the nodule is superficial, within the substance of the lobe, or deep to it. Thus, the scan must always be correlated with the physical examination of the patient, best made while the patient is under the scanning device.

Nodular Goiter: Single Nonfunctioning ("Cold") Nodule

Cold nodules of the thyroid gland, ie, those which do not trap radioiodine, are due to cyst, adenoma, hemorrhage, thyroiditis (sub-acute or chronic), or cancer.

Most so-called cysts are actually colloid-filled nodules containing innumerable involuted follicles lined with flat epithelium. Papillary cystadenomas, similar to those which occur in the ovary, and squamous lined cysts are less common. Benign adenomas of the thyroid gland which do not function rarely undergo malignant change, and are therefore not generally considered to be premalignant. The vascular supply of adenomas is from the capsule, and as the nodules enlarge the central portions tend to undergo degenerative changes, including hemorrhage, cyst formation, infarction, fibrosis and calcification. Occasionally, the hemorrhage is acute and presents as a well-defined clinical syndrome. Subacute thyroiditis usually presents with painful, tender, cold nodules, but chronic thyroiditis often does not.

The proper management of cold nodules clearly depends upon a consideration of the age of the patient, the size of the nodule, the clinical picture, and a knowledge of the statistical incidence of cancer in such nodules.

Dr. Charkes is Associate Professor, Radiology and Medicine, Temple University School of Medicine; Director, Section of Nuclear Medicine, Department of Radiology, Temple University Health Sciences Center, Philadelphia, Pennsylvania.

This paper was originally presented at the Tuesday Morning Medical Conference, Wilmington Medical Center, May 12, 1970.

In general, growth and involution of thyroid nodules closely follow the function of the nodule insofar as its relationship to pituitary thyrotropin (TSH) is concerned. That is, nodules which show little or no uptake of iodine (cold nodules) as a rule cannot be made to involute by removing TSH, ie, by administering thyroid hormones. There is thus no justification from a theoretical standpoint for attempting to treat nonfunctioning cysts, adenomas, hemorrhage, or areas of thyroiditis with thyroid hormone, and experience bears out this point.

The overall incidence of carcinoma in surgically removed, nonfunctioning thyroid nodules has been shown to be about 10-25%, and averages 16% in our hospital. This figure, however, varies with the age of the patient, the size of the nodule, its clinical characteristics (growth, pain, tenderness, pressure symptoms, local invasion) as well as with the means of selection of such patients for surgery. Thyroid carcinoma, generally of the papillary variety, is described in 2-4% of autopsies in this country. Inasmuch as this is far and above the incidence of clinical cancer of the thyroid gland, it must be assumed that these represent so-called "pathologist's cancers." It is of interest that this is approximately the incidence of thyroid cancer in asymptomatic cold nodules which are clincially thought to be benign.[1] In a long-term follow-up of 244 patients in whom papillary carcinoma occurred in a nodule smaller than 1.5 cm, there were no deaths from the disease.[2] It may therefore be stated that small, asymptomatic cold nodules occurring in patients over the age of 60 need not be removed, since even if cancer is present, it is unlikely that the patient will die from the disease, or even suffer any morbidity from it.

The incidence of carcinoma in large, symptomatic cold nodules (slow increase in size, irregular firm mass) is about 25%, and in those nodules which clinically are felt to represent *probable* carcinoma, (associated dysphagia, hoarseness, fixation, ipsilateral adenopathy), the incidence is 50%.[1] These nodules should therefore always be excised for diagnostic purposes regardless of age. However, if clinically it appears that the patient has subacute thyroiditis or has recently bled into the thyroid gland, particularly if there are supporting laboratory data, then biopsy of the cold nodule may justifiably be deferred. Carcinomatous nodules which simulate subacute thyroiditis or hemorrhage are usually highly malignant and are unresponsive to surgery; threfore a short delay while the clinical picture is being clarified is thought to be acceptable.

It is apparent that a trial of thyroid hormone administration will not be of diagnostic benefit in patients with suspected cancer (ie, with a cold nodule). Since some carcinomas of the thyroid gland are under pituitary control, some carcinomas may involute with thyroid hormone administration. However, surrounding normal tissue may become atrophic with treatment, giving the false impression that the nodule has decreased in size. On the other hand, as was pointed out, most benign cold nodules do not change in size with hormone administration, nor do some thyroid carcinomas. Thus the administration of thyroid hormone to patients with cold nodules not only fails to bring to light those patients with cancer, but may even be deleterious by lulling the physician and the patient into a false sense of security when in fact a carcinoma with some function may indeed be present.

Since endemic goiter (iodine deficiency) is not present on the eastern seaboard of the United States, there is no indication for administration of iodine solution in the treatment of nodular goiter at this time.

Nodular Goiter: Single Functioning ("Warm") Nodule

Functioning thyroid nodules are due either to areas of hyperplasia or to adenomas, and such nodules may be classified as suppressible (under pituitary control) or nonsuppressible (autonomous). This operational classification is of aid in management of such nodules. The diagnosis is made by radioiodine uptake and scan before and after administration of thyroid hormone.[3]

An example of a suppressible nodule is shown in Figure 1. Such nodules can be made to involute by treatment with desiccated thy-

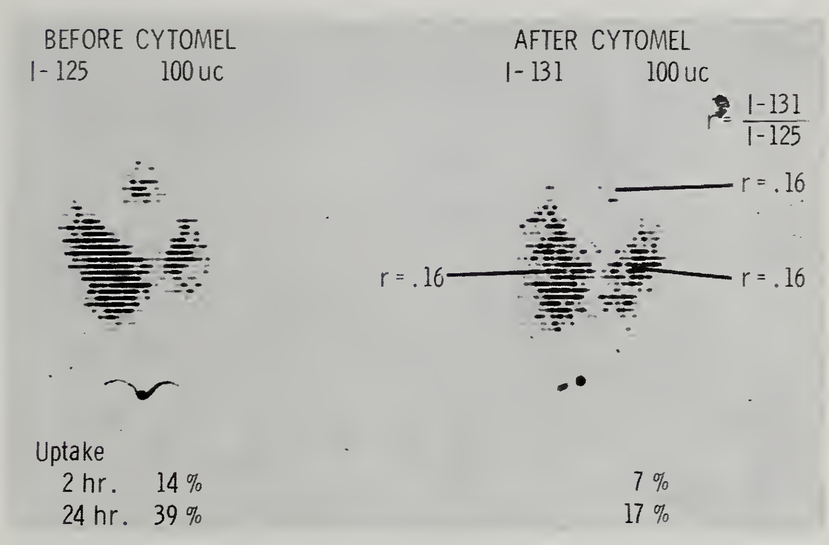

Figure 1
Functioning, suppressible nodule of pyramidal lobe. This type of nodule can be made to involute by administration of thyroid hormone. Histologically the nodule proved to be a benign follicular adenoma.

roid in suppressive doses (120 to 180 mg daily or its equivalent) for three to six months. The incidence of carcinoma in such nodules is extremely low, and excision is not necessary except if clinical suspicion of malignancy is present. Sometimes these suppressible nodules are of clinical significance because they represent areas of compensatory hyperplasia in patients with thyroid failure. This situation is occasionally seen, eg, in patients with Hashimoto's disease (chronic thyroiditis), and it may be the enlarging, hyperplastic nodular enlargement of the thyroid gland which actually brings the patient to the physician. Since fully functioning thyroid cancer is extremely rare, biopsy is not usually indicated and treatment with thyroid hormone should be started not only to relieve hypothyroidism but also to decrease the size of the enlarging nodule. Excision of hyperplastic nodules in patients with Hashimoto's disease is promptly followed by myxedema.

Autonomous functioning nodules are by definition not under pituitary control. The thyroid hormone which they produce, however, suppresses the pituitary output of TSH and results in functional and anatomic atrophy of the extranodular normal tissue. In their earliest stages of growth these autonomous nodules are detected only by hormonal suppression tests, as depicted in Figure 2. Since these nodules are autonomous, they do not respond to treatment with thyroid hormone, and in fact administration of thyroid hormone under these circumstances could result in hyperthyroidism. Recent studies indicate that there is a strong tendency (20%) for these autonomous nodules to undergo sufficient degenerative changes to result eventually in a marked decrease in their function, and in some cases, even in their self-ablation. It appears that the tendency toward degeneration is ten times as common as the tendency to produce hyperthyroidism, and for this reason it appears to be perfectly acceptable to treat such patients by doing nothing. Such indeed might be an ideal method of managing a young patient with an occult autonomous nodule. In older individuals, on the other hand, it may be best to excise the nodule or to ablate it with ^{131}I to prevent the insidious development of hyperthyroidism, often manifest by cardiovascular signs and symptoms in this age group.

The incidence of carcinomatous change in these nodules is extremely small, perhaps of the order of 2%.

Autonomous ("Hot") Nodules

We define a "hot" nodule as an autonomous nodule, ie, a group of functioning thyroid follicles which are unresponsive to TSH. Their function therefore is not under pituitary regulation as is that of normal tissue. It has been found that when these nodules reach 3 cm in size they may produce hyperthyroidism. As mentioned above, there is associated functional

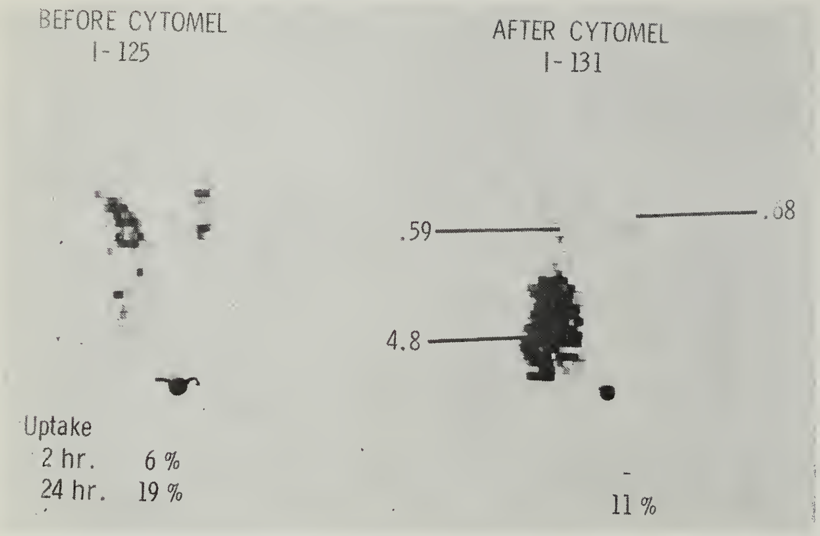

Figure 2
Functioning, non-suppressible (autonomous) nodule in the right lower pole. This type of nodule will not decrease in size when thyroid hormone is given; in fact, hyperthyroidism could result.

and anatomic atrophy of the normal extranodular tissue, and the diagnosis can be made by the demonstration of this suppressed tissue following intramuscular administration of TSH. Administration of thyroid hormone to autonomous nodules, of course, is of no therapeutic value, and in fact may precipitate overt hyperthyroidism. If hyperthyroidism is already present, these nodules should be excised, if the patient is below the age of 40, but they can be functionally ablated by radioactive iodine in patients over the age of 40. The reason for the cutoff in age is that the dose of radioiodine used is considerably in excess of that used for treating Graves' disease, and might conceivably be carcinogenic after many years. It should be pointed out that the radiation from ^{131}I, which is used to treat these nodules, does not affect the degenerative tissue which is so common in the central portion of thyroid adenomas. For this reason these nodules usually do not physically disappear after ^{131}I therapy, even if the patient is rendered euthyroid. Following ablation the previously suppressed extranodular tissue commences normal function.

The degenerative changes are easily recognized on the thyroid scan and in fact provide a clue to the diagnosis. Confirmation is given by the fact that the uptake by the nodule is not suppressed by administration of thyroid hormone, and the extranodular tissue is stimulated by TSH. These nodules may be multiple and may even be associated with cold nodules, or may be present in a generalized enlargement of the thyroid gland which has undergone degenerative changes. Since Graves' disease can be superimposed upon old colloid goiter and can present without infiltrative ophthalmopathy, the diagnosis of autonomous nodular goiter (Plummer's disease) often cannot be made clinically with certainty. Radioiodine studies are indicated in these patients in order to establish the correct diagnosis.

Diffuse Goiter

If a diffusely enlarged thyroid gland shows evidence of uniform function on scan, and if it is evident either by clinical examination or by radioiodine testing that the enlargement is due to hyperplasia, then the goiter will markedly involute with adequate thyroid hormone therapy. On the other hand, if the initial scan reveals large areas of non-function, almost invariably due to the degenerative changes noted above, then treatment with thyroid hormone will be of no avail even though the small areas of function within the gland are suppressible. Studies on such a patient are shown in Figure 3. In patients of this sort, if it is necessary to diminish the size of the goiter, then excision is the proper treatment.

Studies in our laboratory a few years ago revealed that about 25% of patients with dif-

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(Figures 1 and 2 are reproduced from Charkes et al[3] with permission of the publisher.)

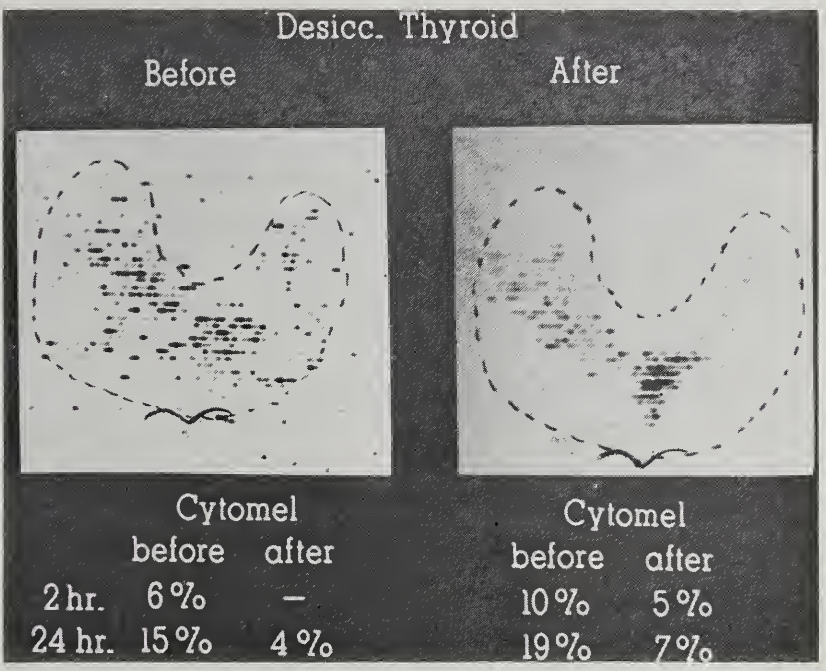

Figure 3
This goiter contains considerable non-functioning tissue. Although the suppression test revealed that the functioning tissue was under normal pituitary control, the gland failed to shrink after three months of treatment with three grains daily of desiccated thyroid. Goiters with this much degenerative (cold) tissue cannot be treated medically. Histology revealed colloid goiter with degenerative changes.

fuse goiter harbored areas of autonomy, which were demonstrable by repeat radioiodine uptakes and scans after hormonal administration.[3] These patients are potential candidates for hyperthyroidism, and should be observed from time to time for this development.

Summary

Radioiodine studies are useful in selecting patients for hormonal, surgical, or radioiodine treatment. Portions of the thyroid gland which do not trap iodine will not be altered in size by administration of thyroid hormone, and surgical removal is indicated if treatment is required. Areas of hyperplasia, however, are readily managed with thyroid hormone, and areas of autonomy can be treated either surgically or with radioactive iodine. In some patients there is a place for no treatment except observation. Thyroid function tests provide an excellent mechanism for selecting patients for proper management.

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* * *

GENERAL LAFAYETTE, THE PATIENT

During the Battle of the Brandywine in the winter of 1777, General Lafayette was wounded in his leg by a British ball. His blood loss was sufficient that on arrival at Chester where he rode along with the Colonists' retreating troops, he fainted. He was then moved to Bethlehem, Pennsylvania, to a General Hospital of the Army staffed largely by members of the Moravian congregation. From there, Lafayette wrote to his wife: "*. . . it is a flesh wound and does not touch bone or nerve, the surgeons are amazed at its healing so quickly; they fall into ecstasy at every dressing and say it is the loveliest thing in the world. For my part I think it is ugly, a nuisance and quite painful enough. Be easy about it, I have a friend who has spoken to the doctors in such a way that I will be well cared for. It is General Washington.*"

IN VITRO

THYROID FUNCTION TESTS: A Review

• The use of in vitro laboratory tests to assess thyroid function has been gaining in popularity. The authors present several easily-performed and specific procedures which permit enhanced diagnostic efficiency.

JONATHAN P. MILLER, PH.D.
JOHN J. COUPAL, PH.D.

Thyroxine (T_4) and triiodothyronine (T_3) are thyroidal hormones. Circulating T_4 is bound to three serum proteins: thyroxine-binding globulin (TBG), thyroxine-binding prealbumin (TBPA), and albumin. Less than 0.05% of serum T_4 is found in the unbound form. However, it is probably only the unbound "free" hormone which is physiologically active.[1] Free serum thyroxine is increased in thyrotoxicosis and reduced in hypothyroidism.

TESTS BASED UPON SATURATION OF HORMONE-BINDING PROTEINS

T_3 Uptake by Red Blood Cells

Incorporation of radioactive T_3 by erythrocytes as an aid in thyroid-function diagnosis was reported by Hamolsky *et al.*[2] In this procedure ^{131}I-labeled T_3 is added to whole blood, and the mixture is incubated at an elevated temperature. The blood is then centrifuged, and the plasma is removed. The erythrocytes are washed, and radioactivity therein is determined. The percent erythrocyte "uptake" is computed and converted to a standard hematocrit value of 100 for comparison. In Hamolsky's study, euthyroid persons evidenced a mean 13.9% uptake while mean values for hypothyroid and hyperthyroid subjects were 9.3% and 21.9%, respectively.

Thyro-Binding Index (TBI)

Scholer[3] modified Hamolsky's T_3 uptake test by replacing red blood cells with an anion exchange resin. In this procedure, resin is labeled with ^{131}I T_3. Plasma is then incubated with the resin, and an assay is made of the amount of T_3 migrating from resin into plasma. The degree of this transfer is assumedly due to plasma thyroxine-binding protein and the extent of saturation of these proteins with T_4. Comparison of results of the test serum with a pooled standard serum yields the thyro-binding index. A commercially available kit based on this method has been evaluated.[4] Serum from euthyroid adults yielded a mean TBI value of 0.94 with a range of 0.84 to 1.04. Hyperthyroid serum with a lower T_4-binding power had a lower TBI, and hypothyroid serum had an elevated TBI value.

Resin-Sponge Uptake

A further technical advance involves the use of a polyurethane sponge with evenly-distributed resin fixed within the sponge.[5] The sponge uptake procedure allows for the rapid determination of the ability of serum thyroxine-binding proteins to bind radioactive T_3. Shaking is not required during incubation, and the physical shape of the sponge allows for excellent counting geometry with resultant reproducibility of results. Typical values for resin-sponge uptake are 25-35% for euthyroids. Uptake values less than 25% are indicative of the hypothyroid state, and elevated values are indicative of hyperthyroidism.

Thyroxine-Binding Globulin (TBG)

TBG is present in normal serum at an estimated level of 1 to 2 mg/100 ml. Of the three

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Dr. Miller is Director and Dr. Coupal is an Isotope Chemist in the Radio-Pharmaceutical Research Department, Abbott Laboratories, North Chicago, Illinois.

TABLE 1

RESULTS OF THYROID FUNCTION STUDIES IN PATIENTS

Group	No. of Patients	Free T_4 (mμg/100 ml)	PBI (μg/100 ml)	RT_3%	PBI - RT_3 Product
Normal (euthyroid)	42	1.77 ± 0.25*	5.53 ± 0.79	30.0 ± 2.9	5.52 ± 0.87
Goiter (euthyroid)	25	1.76 ± 0.29	5.64 ± 0.71	29.2 ± 3.6	5.51 ± 0.80
Hyperthyroid	20	8.47 ± 2.87	13.7 ± 3.0	48.9 ± 6.7	22.6 ± 6.6
Hypothyroid	22	0.54 ± 0.29	1.74 ± 0.84	23.4 ± 3.4	1.39 ± 0.76
Pregnant (euthyroid)	18	1.50 ± 0.41	8.12 ± 1.56	17.6 ± 1.6	4.75 ± 0.87
Estrogen-treated (euthyroid)	9	1.62 ± 0.28	7.89 ± 1.17	21.7 ± 2.9	5.71 ± 0.96
Androgen-treated (euthyroid)	5	1.78	4.18	35.0	4.88
Sick (non-thyroid illness)	45	2.88 ± 1.14	4.66 ± 1.21	36.6 ± 6.6	5.55 ± 1.33

Data summarized are mean values ± standard deviation and were taken from B. G. Anderson's publication.[26]

T_4-binding proteins, TBG is the most important physiologically.[6] In normal persons, TBG binds approximately 75% of the total serum T_4. A close inverse relationship exists between the available T_4-binding sites on TBG and the physiologically important "free-T_4" fraction of serum. Present clinical methods for determination of TBG actually refer to assay of maximal T_4-binding capacity of TBG. The procedure for determining this capacity is as follows. Serum T_4-binding proteins are separated by electrophoresis following saturation with non-radioactive exogenous T_4 and a radiothyroxine tracer. The maximal binding capacity of TBG can be determined by scanning of the electrophoretic strip or plate for radioactivity. TBG binding capacity is reported to be 19.7 ± 3.0 μg T_4 bound per 100 ml serum (mean ± S.D.) in normal males and 21.6 ± 3.2 in normal females.[7]

TBG binding capacity is increased in nonpregnant women receiving oral contraceptives or other estrogens,[8] in normal pregnancy,[9] and in acute intermittent porphyria.[10] A decrease in TBG binding capacity is elicited by androgen or anabolic steroid treatment[11] and by therapy with ACTH, salicylates, diphenylhydantoin, cortisone, and anticoagulants. Stress, fever, chronic illness, recent surgery, and respiratory acidosis can also lead to decreased binding capacity of TBG. The patient, however, often remains clinically euthyroid.[12]

Members of families with genetically elevated[13] and decreased[14] TBG binding capacity have been studied. Those persons with elevated capacity (mean 86 μg T_4 bound per 100 ml) had elevated PBI (mean 12 μg/100 ml) and serum T_4 (mean 20.7 μg/100 ml) values but were clinically euthyroid. Males of the family with reduced binding capacity had a TBG binding capacity of 0 μg T_4 bound per 100 ml serum. These latter subjects appeared clinically euthyroid in spite of the fact that the mean PBI was 2.1 μg/100 ml and the mean value for T_3 resin uptake was 61%.

TBG binding capacity therefore is altered by pharmacologic agents, physiologic and pathologic states, and hereditary influences. One commercial clinical laboratory reports that of 500 consecutive samples submitted to them for analysis, about 10% evidenced altered TBG binding capacity.[15] The physician diagnosing thyroid malfunction should be aware of the many factors affecting binding capacity and their influence on thyroid function tests.

Tests Based on Concentration of Thyroid Hormone

Serum Protein-Bound Iodine (PBI)

The PBI quantitates iodine present in T_4 and T_3 as well as other iodinated proteins present in serum. High concentrations of inorganic iodine will interfere with the PBI. In the procedure for PBI, serum protein is precipitated by a zinc salt and the protein is ashed. Iodine is extracted and assayed spectrophotometrically through its catalytic effect on the conversion of ceric to cerous ion. The serum PBI ranges from 4 to 8 μg/100 ml of serum in the normal adult with ingestion of 0.15 mg iodine daily.[16] Elevation of the PBI will result from increased intake of iodine from various sources (eg, iodine-containing medication such as Lugol's solution and radio-opaque contrast media). Serum PBI is increased in hyperthyroidism, acute and subacute thyroiditis, and hyperpituitarism. Elevation of PBI is also seen in pregnancy and after treatment with T_4 or various estrogens. Depressed levels of PBI are seen in primary and secondary hypothyroidism, chronic thyroiditis, and hypopituitarism. Medications such as antithyroid drugs, ACTH, cortisone and testosterone will also lower the PBI.

Butanol Extractable Iodine (BEI)

In the BEI test, iodine in acidified serum is extracted with butanol.[17] The extract then is treated in a manner similar to that of the PBI. Use of the BEI is appropriate where relatively large amounts of inorganic iodides have been consumed before the test. The procedure does not measure iodide, iodoprotein, elemental iodine, or mono- or diiodotyrosine.[18] Organic iodides, however, such as radiographic contrast media, will interfere with results. Normal BEI values range from 3.5 to 6.5 μg/100 ml of serum.[16]

Serum T_4 by Competitive Protein-Binding Analysis (CPBA)

Murphy and Pattee[19] developed a method for determining total serum T_4 by CPBA. The procedure is based on competition of known amounts of added T_4 for the binding sites on a fixed amount of TBG, which has been labeled with radiothyroxine. Increasing amounts of T_4 decrease the amount of radiothyroxine which is bound to TBG. The bound and free T_4 can be separated by use of an anion-exchange resin,[20] and a calibration curve can be generated which is a function of increasing amounts of added T_4. Following the extraction of T_4, unknown serum samples are incubated with labeled TBG and total T_4 can be obtained by reference to the calibration curve.

A commercially available diagnostic kit based upon CPBA has been evaluated.[21] The normal range for serum T_4-iodine by this method is 3.4 to 8.9 μg/100 ml. Fourteen clinically hyperthyroid subjects had a mean T_4-I of 17.7 μg/100 ml with a range of 10.2 to 33.4. Nine clinically hypothyroid patients had a mean T_4-I of 1.8 μg/100 ml with a range of 0.3 to 3.3.

Serum T_4 by Column

Quantitation of serum thyroxine can be accomplished by a column chromatographic method.[22] In this procedure serum is added to the top of a column of an anion-exchange resin. Thyroxine is bound to the resin. The column is washed to remove non-thyroxine components. The thyroxine is then removed from the resin by a more acidic wash solution, and the hormone is collected. After further chemical treatment, the thyroxine is ashed and iodide remaining is quantitated by a ceric-arsenious acid reaction. The presence of added inorganic iodide and iodotyrosines in moderate quantities was not found to influence results of the column method. By this technique, serum thyroxine iodine in 40 normal young men reportedly averaged 4.9 μg/100 ml with a range of 3.9 to 6.3.[23]

Free T_4 by Equilibrium Dialysis

The determination of non-protein bound T_4 is difficult, as circulating levels of this form of the hormone are very low. Sterling and Brenner describe an equilibrium dialysis procedure for assessment of free T_4.[24] Serum, to which is added a tracer quantity of ^{131}I labeled thyroxine, is dialyzed against a buffer solution at an elevated temperature for 16 hours. The free T_4 diffuses through a semipermeable membrane. An aliquot of dialysate containing the

TABLE 2
THYROID FUNCTION STUDIES PERFORMED ON "WALKING NORMAL" SUBJECTS

Subjects	Number	T_3 Percent Uptake Mean	T_3 Percent Uptake Range	Serum Thyroxine (μg per 100 ml) Mean	Serum Thyroxine (μg per 100 ml) Range	Free Thyroxine Index[(a)] (FTI) Mean	Free Thyroxine Index[(a)] (FTI) Range	T-7 Value Mean	T-7 Value Range
Normal Males	20	30.5	24.7-36.1	9.9	7.0 -11.6	10.1	7.6-14.1	2.96	2.26- 4.23
Normal Females[(b)]	20	29.1	23.8-34.1	9.6	5.9 -12.4	9.2	5.6-13.5	2.75	1.67- 4.05

(a) Calculated according to Clark and Horn.[25]
(b) Not receiving estrogens (e.g., oral contraceptives) and not pregnant.

free T_4 is then removed and is treated with magnesium chloride. This precipitates T_4 which is washed and counted for radioactivity. This is compared with radioactivity present in a standard of the original serum. From these data the percent free T_4 can be calculated. The percent free T_4 is multiplied by the total T_4 to yield the free T_4 concentration.

Using the above method, free T_4-iodine averaged 2.76 mμg/100 ml in sera from normal subjects. Hypothyroid and hyperthyroid sera yielded mean values of 0.38 and 13.08 mμg/100 ml, respectively. Sera from women past the first trimester of a normal pregnancy had an average free T_4-iodine value of 2.35 mμg/100 ml. Sera from seriously-ill euthyroid individuals yielded a value of 4.76 mμg/100 ml. The results were supportive of the concept that the concentration of unbound hormone determines activity of T_4.

"Free Thyroxine" Index or Factor

The difficulty in assessing free T_4 levels directly has led to an indirect approach. Conventional thyroid function tests are performed, and the results are manipulated to yield a "free T_4" index or factor. Clark and Horn[25] suggested a "free T_4" index. This is the arithmetic product of PBI and resin T_3 uptake (RT_3) values (the latter expressed as the ratio to a pooled normal control serum value). Anderson[26] investigated the concept of the "free T_4" index and obtained the data shown in Table 1.

The author reported that the normal range for PBI · RT_3 product in his laboratory is from 3.8 to 7.3. When "free T_4" indices are calculated, the groups of euthyroid subjects appear relatively homogeneous. Abnormal thyroid status becomes evident. The RT_3 and PBI, which may be misleading when interpreted individually, can, therefore, be multiplied to form a diagnostically valuable term. The "free T_4" index may be especially valuable where altered TBG binding capacity is commonly found: in pregnancy and in women taking oral contraceptives.

Kintner[27] studied the interrelationship of PBI, T_3 resin uptake, and free T_4 expressed as a "free T_4" factor (FT_4F):

$$FT_4F = 0.1\ \text{PBI} \quad \frac{(3.5 + T_3)}{(65 - T_3)}$$

A nomogram based upon this formula is presented by the author permitting rapid determination of the factor. A FT_4F value less than 0.25 is indicative of hypothyroidism and over 0.7 indicates hyperthyroidism.

In a study recently completed at Abbott Laboratories, T_3 uptake and total serum thyroxine values were determined on "walking normal" males and females. Representative data are presented in Table 2. A "T-7 value" was calculated by multiplying the percentage T_3 uptake (divided by 100) by the correspond-

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Table 3

Thyroid Function Studies Performed on "Walking Normal" Females Receiving Estrogens or During Pregnancy

Subject	T-3 Percent Uptake	Serum Thyroxine (μg per 100 ml)	Free Thyroxine Index[a] (FTI)	T-7 Value
A	21.5	15.9	11.8	3.42
B	20.0	17.8	11.9	3.56
C	18.0	14.1	8.4	2.54
D	22.5	16.8	12.6	3.78
E	20.6	11.6	8.0	2.39
F	23.1	14.6	11.2	3.37
G	21.1	8.5	6.0	1.79
H	19.5	18.6	12.1	3.63
	Range 18.0-23.1	8.5-18.6	6.0-12.6	1.79-3.78
	Mean 20.8	14.7	10.3	3.06

(a) Calculated according to Clark and Horn.[25]

ing total serum T_4 value. A narrow range of T-7 values was observed from fairly divergent individual values. The study also included the same tests on "walking normal" females who were receiving estrogens or were pregnant. Typical data from these subjects are shown in Table 3. The T_3 uptake values here were found to be lower than normal and T_4 values generally higher. Individually, these results could lead to confusion in diagnosis. When considered together, using the T-7 concept, all subjects fell easily within the normal ranges demonstrated in Table 2.

Summary

Many *in vitro* methods are available for assessing thyroidal function. Some of these methods are subject to misinterpretation because of prior drug administration to the patient, contamination of the serum sample, or other influences. *In vitro* tests which measure the binding capacity of thyroxine-binding proteins are not affected by contaminating sources of iodine in the serum. The physician must interpret results of a test in light of the particular factors which may adversely influence such results.

Free thyroxine concentration in serum appears to be an important determinant of thyroid status. Free thyroxine may be determined by a dialysis technique, but this is a lengthy and difficult procedure. The physician, however, may derive a free thyroxine index or factor by use of simplified *in vitro* tests which can be performed in his own laboratory, eg, resin-sponge uptake and total serum T_4. The T_4 index or factor is a valuable indicator of free thyroxine concentration.

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(*Continued on page 249*)

SOME OBSERVATIONS OF MEDICAL CARE IN THE USSR

• Some views, notes, and opinions after a tour of the Soviet Union's three largest cities, Leningrad, Kiev, and Moscow. In each of these cities, a close examination of a medical institution was made with an evaluation of its overall position in the medical care system.

Allen C. Wooden, M.D.

Soviet medicine is a concern of the entire nation and is given high priority in the economic obligations of every citizen. To the Russians, health is a resource of the state, of equal importance to other more tangible resources. Their medical team effort would seem to be based on the philosophy, the greatest good for the greatest number. This often may mean sacrificing quality for quantity.

To try to overcome the shortage of medical personnel in this vast country, the 82 medical schools in the USSR are graduating approximately 35,000 physicians annually. Even with this number of new doctors each year, the demand for medical care is so great that specially trained paramedical personnel called "felshers" are used in many under-developed regions. The "felshers" have a standard three-year nursing course with an additional year of training in emergencies and trauma. Completing the medical educational system, tens of thousands of nurses and paramedical technicians are regularly graduated from approximately six hundred schools, which, including "felshers," have an enrollment of three hundred thousand.

The training of a doctor of medicine after preliminary education requires six years: three years at college level, followed by three years of medical education. One year of internship, usually taken as the last year of medical school, is the rule. For a specialty, the medical student begins special medical training in the last two years of medical school, completing his specialty training by two years' study in a specialty hospital. After graduation, young doctors are required to spend three years in the military service or in a region picked by the government, usually an undeveloped part of the country.

Seventy percent of the Soviet physicians are women, probably because of the relatively low pay and easier working conditions. The pay for the first three years is 90 rubles a month. (A ruble has the approximate value of $1.11 in United States money.) After this period it goes to 120 rubles a month for general medical doctors. For certain specialists and professorships, it may go as high as 300 to 500 rubles a month.

Working hours for doctors are usually restricted to 48 hours a week in periods of eight hours a day, with shifts that vary from month to month. Rarely does a doctor work alone; almost always, he is part of a team. (Apparently, this is necessary to share responsibility. This same team approach is seen in department stores, where at least two sales-people must always handle the merchandise and transact the sale.)

In each of the three cities we visited, a typical medical institution was closely examined. Following the inspection of the building, its equipment, etc., a question and answer type

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interview was conducted between the director of the hospital and our group, with help of specially trained Intourist guides.

Leningrad

In the suburban area surrounding the cities are many housing complexes of multi-storied apartment houses. These are complete communities within themselves, providing homes for ten to forty thousand people, with stores, schools, clinics, and hospitals. Usually, in the center of the complex an emergency medical-surgical hospital is located for each apartment district.

Our group of physicians had the opportunity to visit a typical hospital of this type. The hospital was housed in a three-storied building amply surrounded by open space. There were adequate stairways, elevators and large corridors for the transportation of patients. It contained 360 beds, two operating rooms, several general clinics, a gastrointestinal and a cardiovascular-respiratory clinic. The director of the hospital was a woman, a specialist in obstetrics and gynecology, who freely explained the function of the hospital in relation to the district it served. Seventy percent of her time was taken up with administration and 30% in consultation in the GYN clinic.

The average length of stay of the patients was 17½ days. For internal medical and neurological patients the stay may be much longer, averaging 40 days. Any patient requiring specialized medical or surgical treatment was transferred to a specialized institution.

The hospital equipment, in general, appeared old by our standards, but was clean and adequate.

In the specialty clinics there was some modern diagnostic equipment. The multiple electrocardiograph monitor and gastroscope appeared to be of Japanese manufacture. Patients numbered four to six in wards, with a nursing station for each three wards located in the corridor. These stations were very old-fashioned, box-like affairs made of wood, divided into small cubicles with the medicine for the patients placed in small individual paper bags. The nurses' uniforms are similar to ours, except that they wear white hats that almost completely cover the head.

The building in which this hospital was housed was only eleven years old, yet parts of the wall, floors and ceilings were cracking, peeling, or just falling apart because of poor materials or workmanship. Above all, the hospital was clean, and the patients and attendants seemed happy and well cared for. It would appear that a great deal of "tender loving care" goes with each bag of medicine.

From the interview with the director, we were given an insight into the medical care of the mother and child. All women in the USSR are offered the opportunity of several birth control methods. By her own choice, a pregnant woman may be aborted in the first three months of pregnancy. However, if the woman decides to continue to childbirth, the state takes over the care and welfare of the mother. If unwed, she is not treated as an outcast, and her child will be loved and accepted by society from the moment it is born.

During her period of confinement, the mother is cared for by a gynecologic team. She is referred to a special maternity hospital for delivery. The baby receives care from specially trained pediatric groups at the hospital. Mother and child usually leave the hospital together in four to five days. At home, the infant is checked twice a week for the first two months by a doctor and a pediatric nurse. At the end of this period, the mother is required to bring the child once a month for check-ups and routine immunizations.

Also during the interview, certain aspects of preventive medicine were discussed. It is compulsory for all factory workers to submit to a complete physical examination once a year. This includes a chest x-ray, serology, blood work and, in the female, a yearly internal exam with a smear for exfoliative cytology (Pap Smear). The Russians have developed industrial teams consisting of doctor, nurses, and paramedical personnel, who have the medical capability of covering many types of industries in this public health program.

Figure 1
The author in the Winter Palace Square, Leningrad.

Kiev

In Kiev, we had an opportunity to tour the Central Dispatching Clinic for the entire city. It is connected by radio and telephone to eight subclinics in each district of the city. The equipment was modern and standardized in compact units; anesthesia and medications for emergency treatment were also available in a compact form. Assigned to each clinic was a fleet of especially equipped ambulances for the central clinic and subclinics, 152 vehicles in all. This building, in addition to the telephone dispatching service, contained a central laboratory, oxygen refill unit, a pharmacy, and a rest area for the doctors and staff. The clinic also had a library and large staff, or "committee," room. The director of this dispatching system was a woman physician, N. A. Lengauer, winner of the Soviet Red Star Medal which she proudly wore.

The working of the Central Dispatch Clinic (also known as the Kiev Emergency Treatment Station) is as follows: A call coming into the main switchboard is immediately transferred to another operator for the district from which the call originated. A special operator talks to the caller to gather as much information as possible so that the proper type of medical team can be dispatched to the home. In most cases, the general team is sent. These groups are composed of specially trained physicians, two nurses, an ambulance driver and a medical assistant. Each crew has its own equipment for resuscitation, anesthesia, oxygen, etc. The cardiac team has a portable defibrillator and electrocardiogram unit compactly fitted in the ambulance. Once the team reaches the home, the patient is examined and treated, or sent directly to the hospital. In the case of myocardial infarction, every attempt is made to stabilize the patient before transporting to the hospital. After their release from the hospital the follow-up on patients is by the district medical doctor or by the outpatient clinic.

To staff this massive system, there are 1500 medical and paramedical personnel on three eight-hour shifts each day. In Kiev there are approximately 1200 doctors in various assignments and 70,000 nurses and paramedical personnel. For the city and its environs, there are 62 outpatient clinics and 56 "inpatient clinics" (hospitals).

Moscow

In Moscow, our group had the unique privilege of visiting the Sklifosovsky Institute, a large rambling set of buildings that cover several square blocks near the center of the city. This is the oldest surgical research hospital in the USSR, having been the institution where

Figure 2
Emergency vehicles used in team home treatment.

the first transfusion of cadaver blood to humans was performed in 1928. Also housed in this group of buildings is the Moscow Scientific Research Institute for emergency surgery where advanced types of burn therapies are investivated.

Operation Viewed

At this specialized surgical hospital we viewed an operation, on a 19-year-old Ukranian boy, for atresia of the esophagus by Professor Doctor Boris Petrov, a world-famous surgeon and representative of the Soviet Union at the International Congress of Surgery in 1968. The operation performed was the first stage of a two-stage procedure. The operation went very smoothly and during the procedure, the professor held up the mesentery many times to show us how the vessels were ligated to preserve the blood supply.

During the past ten years, Professor Petrov has successfully performed over 200 operations for esophageal atresia on patients from all over the Soviet Union and some Eastern European Countries. Following the operation, we retired to Dr. Petrov's private office, where he answered our questions concerning medical care in the USSR.

After leaving Dr. Petrov, we had a tour of the hospital clinics and laboratory. We were taken to the pathology laboratory where we saw the processing and storage of blood. The director explained that cadaver blood is handled and stored the same as fresh, live donor blood. No anticoagulants are added because the blood does not clot.

We were also taken to the operative area where cadaver blood is collected. It consisted of two rooms with movable plastic shields separating them. After partial preparation, the body is brought into the far room where sterilization of the neck is completed. Following this, the head and the neck of the cadaver are pushed under the shield into the second room, where the right common carotid artery and the right jugular vein are cannulated under sterile conditions with a special pair of large glass cannulae. The body is then placed in Trendelenburg position allowing the blood to flow by gravity into special containers, collecting two and a half to three liters. Following this, the body is placed in a horizontal position, and 300 cc of saline solution is forced into each cannula, and the body is left in this position for at least ten minutes. After the prescribed period of time, the body again is placed in the Trendelenburg position and the saline diluted blood is collected separately.

Following removal, the blood has dextrose, phosphates and antibiotics added and it is cultured for infection and checked for syphilis. The body is then subjected to autopsy. If any

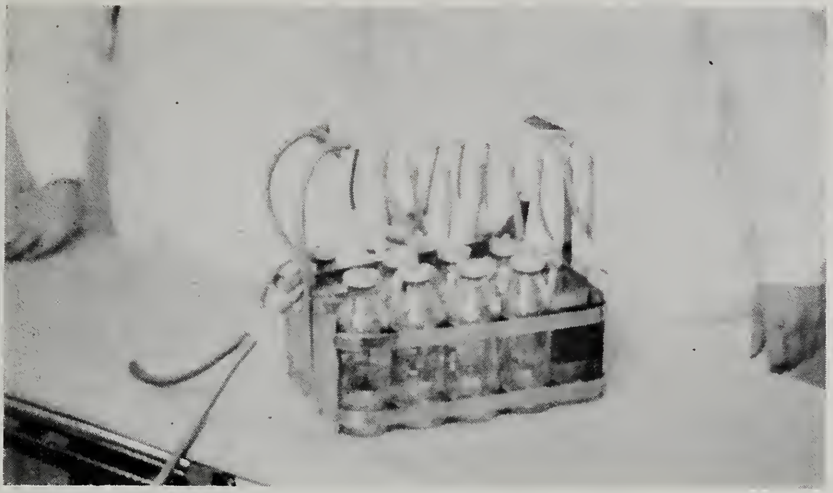

Figure 3
Collecting apparatus for cadaver blood on the tilt table for the body.

pathological condition is uncovered which would make the use of the blood hazardous, the blood is discarded. Cadaver blood can be taken from one to six hours after a non-violent death. It may be used immediately or stored safely for 21 days. After this it is separated and the plasma stored. Since 1930, many transfusions of cadaver blood have been made without any unusual side effects. It has become an established procedure in most Soviet hospitals to remove and store cadaver blood, following non-violent deaths.

We were also shown the ward for the surgery of trauma. It was damp and sparsely furnished. The patients were treated collectively with no curtains or screens between them. At that time, there were three patients in the clinic. One had a gastric hemorrhage and was being prepared for surgery, the second had a chemical burn of the back, and the third patient was a woman with multiple injuries. The entire atmosphere was cold and depressing while the treatment appeared to be rather prolonged.

It goes without saying that a trip to the USSR is a most interesting and valuable experience, although hardly recommended for a relaxing holiday. Winston Churchill once called the Soviet Union, "a riddle wrapped in a puzzle inside an enigma." This is still an apt description.

Many Americans do not realize that the game of life can be played by more than one set of rules. The Russians' team approach to medical care, in my opinion, is worth adopting, as is also, their insistence on preventive medical care.

* * *

ERRATA, ERRATA, ERRATA

We have erred and we are sorry. In our August issue, in Dr. A. J. Morris' article, **Challenges to the Medical Care System,** the legends on Figures 2 and 3 were reversed. The correct legends are, therefore, for Figure 2, Doctors per 100,000 in New Castle County, and for Figure 3, Physicians in New Castle County.

Editorials

IN 0.0000003 OF A SECOND

The System/360 Model 195 Computer is IBM's most powerful. The company describes it as "a super computer built for a limited number of large users." "Extremely fast monolithic circuits in its buffer memory can transmit electronic signals in 3-5 billionths of a second with a basic machine cycle time of 54 billionths of a second," says the IBM literature describing this new giant. How fast is 54 billionths of a second? Light, which travels 186,000 miles a second can travel only 53 feet in this interval.

If you care to rent a 360/195, you can do so for $165,000 to $275,000 per month (we do not know how the exact fee is determined). You may, if you prefer, buy one outright for from $7 million to $12.5 million, depending on the accessories you choose. We do not know if there is a color choice.

Wow!

B.Z.P.

1492 COMMITTEE REPORT

In an era when most of us serve our time on and are subject to the recommendations of more than one committee of one sort or another, we thought you might be interested in this excerpt from a committee report to Queen Isabella and King Ferdinand on Columbus' projected explorations.

"(1) A voyage to Asia would require three years. (2) The Western Ocean is infinite and perhaps unnavigable. (3) If he reached the Antipodes (the land on the other side of the earth from Europe), he could not get back. (4) There are no Antipodes because the greater part of the earth is covered with water, and because Saint Augustine says so . . . (5) Of the five zones, only three are habitable. (6) So many centuries after the Creation, it is unlikely that anyone could find hitherto-unknown lands of any value."

The above report, the authenticity of which is supposed but not certified, appeared in a recent issue of P-----y.

B.Z.P.

CALLIPYGENY AND GRANULOMATA

Where hunger is endemic, the fat woman is considered beautiful, a rare testimony to plenty. Where starvation is unknown, thin females are considered more beautiful than those who are fat. A study by the University of Pennsylvania has demonstrated that with adjustments for height, second generation Americans are thinner than their parents. Weight varies inversely with socio-economic class; debutantes are rarely fat, nor are their mothers. But most American females consider themselves at least a little overweight, and many of them, to their continuing chagrin, really are. (Vogue Magazine has stated that no woman can be too rich or too thin.)

Now, in addition to the previously known liabilities of overweight comes a warning of a new hazard of obesity.[1] Michaels and Poole recently reported four women who required surgical resection of large gluteal masses presumably induced by medications which, because of the size of the women's buttocks, were inadvertently administered into their fat instead of into the muscle. The reason for the misplaced medication is very simple. The thickness of subcutaneous fat in the upper outer female gluteal quadrant usually exceeds 4.3 cm (1.7 inches). The length of the most commonly used needle in hospitals is 3.75 cm (1.5 inches). Ergo, the so-called intramuscular injection never reaches down to the muscle and ejects its contents into gluteal fat where subsequent fat necrosis and formation of dense fibrous tissue with inflammatory changes may be expected as a not unusual sequela. Needles used on women must therefore be longer or a less fat site than the glutei should be used, suggest Michaels and Poole.

A quick check of our local needle sizes indicates that here, as in Canada, the usual needle supplied for intramuscular injection is indeed but 1½ inches long. Since it is unlikely that American women are any less callipygian than their Canadian sisters, the possibility of missing the muscle when needles this short are used must be kept in mind by physicians who are worriers.

B.Z.P.

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[1] Michaels L and Poole RW: Intramuscular injections. Canadian MAJ 102:626, 1970.

MEDICAL SOCIETY OF DELAWARE

1776 - 1789 - 1970

October 16-17, 1970

181st ANNUAL MEETING

PROGRAM

House of Delegates

OCTOBER 16

University and Whist Club

805 N. Broom Street, Wilmington

4:30 P.M. House of Delegates

7:00 P.M. Dinner

Socio-Scientific Session

OCTOBER 17

Delaware Academy of Medicine

1925 Lovering Avenue, Wilmington

8:30 A.M. REGISTRATION — EXHIBITS

9:00 A.M. CALL TO ORDER — Henry H. Stroud, M.D., President, Medical Society of Delaware
Welcoming Remarks — Leonard P. Lang, M.D., President, New Castle County Medical Society
Report of the House of Delegates — Joseph W. Abbiss, M.D., Secretary, Medical Society of Delaware

9:15 A.M. WHAT'S AHEAD FOR AMERICAN MEDICINE? — Horace Cotton, Chairman of the Board, Mastrom, Inc., President, Medical Development Associates, Inc., President-Elect, Society of Professional Business Consultants

9:55 A.M. BLUE SHIELD'S PARTNERSHIP WITH MEDICINE — George Dunlop, M.D., President, Massachusetts Blue Shield, Consulting Surgeon, U.S. Naval Hospital, Massachusetts and U.S. Veterans Hospital, Massachusetts

10:35 A.M. INTERMISSION — EXHIBITS

11:00 A.M. MEDICINE TODAY
Walter C. Bornemeier, M.D., President, American Medical Association

11:40 A.M. BUSINESS MEETING
Election of President-Elect

12:35 P.M. LUNCH — Host, New Castle County Medical Society

2:00 P.M. MEDICINE IN AUSTRALIA TODAY — Alister Brass, B.M., B.Ch., Senior Editor, Journal of the American Medical Association

2:40 P.M. INTERMISSION — EXHIBITS

3:00 P.M. SMOKING — OUR GREATEST PUBLIC HEALTH HAZARD — Alton Ochsner, M.D., Senior Consultant, Ochsner Clinic

3:40 P.M. ADJOURNMENT

Wilmington Country Club

Kennett Pike, Wilmington

6:30 P.M. Cocktails

7:30 P.M. Annual Banquet
Invocation — The Reverend Joseph L Perry, Jr., Senior Pastor, Hanover Presbyterian Church

Dancing 'til 12:30 A.M. — Paul Wilkinson's Orchestra

6 Hours AAGP Credit Applied For

PROGRAM

THE WOMAN'S AUXILIARY TO THE MEDICAL SOCIETY OF DELAWARE

SATURDAY, OCTOBER 17, 1970

12:35 P.M. LUNCH — Host, Medical Society of Delaware

Following the luncheon members of the Woman's Auxiliary are invited to a tour of Longwood Gardens. An introductory film will be shown in the Longwood Auditorium at 2:30 P.M. preceding the tour. To indicate your desire to participate in either event please notify the Society office.

EXHIBITORS

No. 1—Pitney-Bowes, Inc.

Payments don't come in if bills don't go out . . . Billing still isn't fun; but Pitney-Bowes, the originator of metered mail, has come to the rescue with a doctors' billing system that's automatic — eliminating manual typing, folding, inserting, sealing, and affixing postage. Please visit our booth to witness a demonstration.

No. 2—Roche Laboratories

You are cordially invited to visit the Roche display. The Roche representative will gladly answer any questions you may have on any products in the Roche line.

No. 3—Endo Laboratories Inc.

Endo Laboratories will present the latest clinical information relating to our products, COUMADIN® (WARFARIN SODIUM), NUMORPHAN® (OXYMORPHONE) HCL, PERCODAN®, PERCODAN®-DEMI, HYCOMINE®, HYCOMINE®-COMPOUND, HYCODAN®, VALPIN®, VALPIN®-PB, PERCOGESIC®, PERCOGESIC®C.

No. 4—FLINT LABORATORIES, Division of Travenol Laboratories, Inc.

Featured will be Flint Laboratories' newly introduced CHOLOXIN® (sodium dextrothyroxine) which effectively lowers elevated serum cholesterol. Also featured will be SYNTHROID® (sodium levothyroxine) indicated in hypothyroidism, and FERROLIP® (ferrocholinate), the safe iron.

No. 5—Abbott Laboratories

Abbott Laboratories invite you to stop by their exhibit where their representatives will be available to answer any questions you may have on their products, ERYTHROCIN®, SURBEX-T®, SYLLAMALT®, and PLACIDYL®.

No. 6—William P. Paythress & Company, Inc.

You are cordially invited to visit the exhibit of Wm. P. Poythress & Company, Inc., manufacturers of ethical pharmaceuticals since 1856. Our medical representative will be available to supply you with literature, samples and technical information on Antrocol, Bensulfoid Lotion, Merpectogel, the Mudrane combinations, Panalgesic, Solfo-Serpine, Solfoton, Synirin, T C S, Trocinate and Uro-Phosphate.

No. 7—Bristol Laboratories

You are cordially invited to visit our exhibit reflecting Bristol's leadership and enduring commitment to the manufacture of life-saving antibiotics. For your consideration, the following Bristol antibiotics are featured: POLYCILLIN® (ampicillin trihydrate), KANTREX® (kanamycin sulfate) and PROSTAPHLIN® (sodium oxacillin). Our representatives welcome the opportunity to answer your inquiries.

No. 8—The Division of Physical Health of the State Department of Health and Social Services and the Delaware League for Planned Parenthood

Our display will update the Family Planning Program in Delaware. Professional literature on the safe use of the pill and other methods will be provided. Visual aid materials and a listing of public and private services will be available.

No. 9—J. A. Montgomery, Inc.

Members of the Medical Society of Delaware are cordially invited to seek the latest information on any type of insurance, estate planning, or tax savings. J. A. Montgomery professional specialists will be on hand.

No. 10—Wyeth Laboratories

The Wyeth exhibit will feature the low dose oral contraceptive, OVRAL, and SERAX, our well established anti-anxiety agent. Mr. Bob Dulick and Mr. Larry Carley will be in attendance and happy to be of service to you.

No. 11—PRO Services, Inc.

Distributor: Modern America Securities Corporation.
PRO Services, Inc. is a full service financial organization specializing in tax-sheltered retirement programs; it is administrator for professional society Keogh programs and plans for professional corporations. PRO handles over 80 mutual funds (including no-load PRO Fund), and through Cannon & Company, a brokerage subsidiary, manages general securities accounts.

EXHIBITORS

No. 12—Schering Laboratories

Schering Laboratories invite you to visit their exhibit, Booth Space No. 12, where their representatives will be available to discuss with you any questions you have on AFRIN®, CELESTONE®, SOLUSPAN® Injection, TINACTIN®, GARAMYCIN® Injectable, DRIXORAL®, VALISONE®, ETRAFON®, or any other Schering product.

No. 13—Mead Johnson Laboratories

Representatives Wayne Ashley and William Waller welcome you and your friends to stop by their booth and discuss Mead Johnson's two newest products — NURSETTE-RN and VASODILAN-20.

No. 14—Mutual Benefit Life Insurance Company

Walter B. Suskind, C.L.U., Agency of Mutual Benefit Life Insurance Company, presents "Financial Planning for the Physician." There will be special emphasis this year on the Professional Corporation, including the tax-shelter relating to insurance and retirement. Mutual Benefit has been appointed by the AMA as one of the four administrators for their retirement plan for physicians.

No. 15—Wallace Pharmaceuticals

Jeff Voluck, the Wallace Representative in Delaware, will be present to answer any questions. Jeff cordially invites all members and guests of the Society to stop by.

No. 16—Merck Sharp & Dohme

The Merck Sharp & Dohme exhibit has been designed to supplement the physician's therapeutic armamentarium. Technically trained personnel are present to discuss the scope and variety of services offered.

No. 17—John G. Merkel & Sons, Inc.

See the latest and finest in medical and laboratory equipment for hospital or office and the latest equipment for the home care of your patient. This equipment available upon request.

No. 18—Lakeside Laboratories, Inc.

Lakeside Laboratories, Inc. exhibit includes Cantils, Imferon, Mercuhydrin, Metahydrin, Metatensin and Norpramin.

No. 19—Gray Audograph Agency

Gray Audograph dictation systems offer time saving methods of dictation. Many minutes a day may be saved through the use of a portable unit, telephone dictation, or a remote dictation system. May we discuss your record keeping problems with you?

No. 20—Scientific Publications

Our 17 years in close contact with the medical profession enable us to serve you promptly and efficiently in this dedicated field. Non-medical books are also available through our Trade Department for your convenience. Located just outside Philadelphia adjacent to International Airport on Alternate Rt. 13 — our services are used by many institutions along the eastern coastline.

No. 21—Ives Laboratories, Inc.

Ives Laboratories, New York, will display the family of ISORDIL® (isosorbide dinitrate) products, providing a dosage form suitable to the needs of each patient with angina pectoris (the pain of coronary artery disease). There will also be featured CYCLOSPASMOL® (cyclandelate), a peripheral and cerebral vasodilator. Representatives will be in attendance to discuss these products and other Ives specialties with you.

No. 22—Warner-Chilcott Laboratories

Your Warner-Chilcott representatives cordially invite the members of the Medical Society of Delaware to see and discuss what's new at Warner-Chilcott Booth No. 22.

No. 23—Cappeau's Drug Stores

Cappeau's five drug stores in Wilmington, Willow Run, Newark, Middletown, and New Castle welcome members of the Medical Society of Delaware to visit their exhibit.

No. 24—Ames Company

The Ames representatives will be available to discuss our products with the physicians of Delaware. Best wishes for a successful meeting.

No. 25—Blue Cross and Blue Shield of Delaware, Inc.

You are cordially invited to visit with our representatives who will gladly answer any questions you may have.

No. 26 & 27—3M Business Products

3M Statement Systems solve your accounts receivable problems.

EXHIBITORS

No. 28 & 29—Chit-Chat Foundation

Chit Chat Farms is a private, non-profit, 60 bed residential facility licensed by the Commonwealth of Pennsylvania for the care and treatment of alcoholic men and women. It is located in the rolling hills of Berks County ten miles west of the City of Reading, and about 65 miles from Wilmington. You are cordially invited to visit our booth for an interesting, fifteen minute audio-visual presentation of the Chit Chat Farms alcoholism rehabilitation program.

No. 30—Coca-Cola USA/A Division of The Coca-Cola Company

Ice Cold Coca-Cola served through the courtesy of the Delaware Coca-Cola Bottling Company and Coca-Cola USA.

No. 31—Pfizer Laboratories Division

Mr. John Lomax, Pfizer representative from Wilmington, will be available and looking forward to discussing products and services provided by Pfizer Laboratories.

No. 32—F. P. Rhoades, M.D.

This exhibit on "Results of a Computerized Study of Cyclic Hormonal Treatment" delineates the computerized study of 1,200 women who were on an estrogen progestin combination for 24 months. The report includes a breakdown of the results achieved in relieving some twenty symptoms associated with the menopause.

No. 33 & 34—Universal Medical Services, Inc.

No. 35—The Purdue Frederick Company

No. 36—Smith Kline & French Laboratories

Representatives will be on hand to answer your specific questions and provide information on their products and services.

No. 37—Libby Surgical Supply Co., Inc.

Libby Surgical Supply Company will display the new Sorenson Uterine Aspirator and other electronic equipment.

No. 38—Stuart Division/ATLAS CHEMICAL INDUSTRIES, INC.

A cordial invitation is extended to all members and guests attending this meeting to visit the Stuart Pharmaceuticals booth. Specially trained representatives will be in attendance to answer your questions on new products, developed in our modern laboratories, which have particular interest for the medical profession. Products featured are: DIALOSE®, DIALOSE® PLUS, MULVIDREN®, MULVIDRIN®-F, MYLANTA®, MYLICON®, STUART PRENATAL®, STUART PRENATAL®w/Folic Acid, and SORBITRATE®.

No. 39—Bertholon-Rowland Agencies

The Medical Society of Delaware sponsored Accident and Sickness Plan has been available to the members since 1953. Representatives of the Bertholon-Rowland Agencies welcome this opportunity to review the important features of your group program with particular emphasis on flexibility especially with regard to adopting this plan for use in funding protection for Professional Associations.

REGISTRATION

The registration desk will open at 8:30 A.M. on October 17 at the Delaware Academy of Medicine. Coffee will be served by the Delaware Association of Medical Assistants during the registration period. Admission to all sessions will be by badge secured at the registration desk.

The Medical Society of Delaware gratefully acknowledges the
assistance of the following in the presentation of the program:

Delaware Interagency Council on Smoking and Health

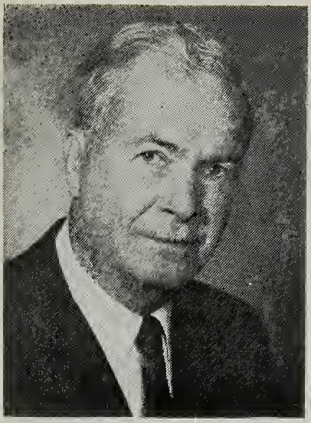
Eli Lilly and Company

Merck Sharp & Dohme

William H. Rorer, Inc.

Stuart Division, ATLAS CHEMICAL INDUSTRIES, INC.

Wyeth Laboratories, Inc.



President's Page

PREPAID GROUP PRACTICE?

The group practice proposal outlined by Dr. David Platt and endorsed in principle by the Council of the Medical Society tacitly recognizes that physicians are slow to change. Physicians know why this is true, but the public does not. The demand for change in methods of delivering medical care is mounting, nationally and locally. National developments may prevail over local methods.

The physician is no longer able to provide for all his patients' ills alone, nor is he able alone to make decisions about systems of health care. Patients come to the doctor as individuals, but payment for services to these individuals relates to groups: Medicare, Medicaid, Blue Shield, commercial carriers, industrial compensation, and many others. These groups are manifestations of socialized medicine. Until recently the groups have been overwhelmingly voluntary. Government involvement in medical care in the seventies promises to become total rather than partial.

Attitudes of various leaders in Delaware harmonize with attitudes that have been clearly accepted nationally even to the point of trial programs. The timeliness of these developments in Delaware is most encouraging. Some doctors, recognizing the trends, are not only willing to experiment with new approaches such as prepaid group practice but seem willing to go all out, closing their offices and entering facilities that will offer common services, producing greater economies for all physicians in the group. The greatest economy may be wiser use of the doctor's time and ability.

Organized labor in Delaware unmistakably seeks a prepaid plan, hopefully an improvement over present methods. Industrialists have indicated an interest and well they may. Such programs as Kaiser Permanente in the West and HIP in the East demonstrate advantages in reduced hospital admissions and shorter lengths of stay. The State government has shown interest in prepaid group practice as a possible means of providing for the indigent and medically indigent. Citizens, in increasing numbers, have indicated interest, especially the old for whom present arrangements have proved sadly lacking.

Manpower and money are involved in the decision, but, for the doctor, the main involvement may be freedom of choice. Today the decision may be freely and deliberately made. But all too soon the pressures for change may jeopardize this freedom.

Henry H Stroud

Delaware Academy of General Practice

PEER REVIEW, UTILIZATION, AND FEES

The following excerpts from the AAGP Committee on Medical Economics Annual Report dealing with peer review and utilization and fees are presented for your information. The report containing AMA policy statements was subsequently adopted by the AAGP House of Delegates.

> “The AMA Council on Medical Service knows of no greater challenge facing the profession today than to secure universal acceptance and application of the review concept as the most meaningful method for creating a public awareness of medicine’s efforts to assure high quality of health services at a reasonable cost, slowing the rate of escalation in health care charges, stimulating health insurance organizations to make broader protection available to more people, and retaining professional control in patient-physician fiscal and economic relationships.”

At its meeting in July, the AMA House of Delegates approved the council’s report and also the Board of Trustees’ recommendation that peer review be assigned the highest priority by the state and county medical societies.

Peer review should not be limited to adjudication of fees, but should include review of over- or under-utilization of services both in and out of the hospital, in extended care facilities and in nursing homes.

The report also included principles on the functions of medical society review committees that had been adopted by the AMA House of Delegates. Four of these principles adopted in 1966 are particularly significant. They are:

1. “The medical profession should assume leadership in establishing forums through which the judgment, training ,and experience of physicians in practice in the community can be brought to bear in the review of questionable cases involving either (a) usual, customary, or reasonable charges, (b) the effectiveness of hospital use, or (c) the necessity of the services rendered.
2. “Medical societies should establish and support professional review committees and provide the guidance and advice required to assure their optimal function.
3. “The committee should develop suitable criteria to evaluate adequately the individual and collective volume, cost and quality of care, wherever provided.
4. “The review committee should stimulate area hospitals’ medical staffs to develop appropriate mechanisms such as utilization committees for review of hospital admissions with respect to need for admission, lengths of stay, discharge practices, and evaluation of services ordered and provided.”

Policy on Utilization and Fees

The 1966 AMA House of Delegates also adopted other reports relating to payment for professional medical services which include policy statements on the importance of and the need for viable professional review functions. Included in these reports were the following statements of policy which appear to be applicable to this subject of medical society review for both utilization and fees.

1. “It is proper for the physician to establish the fee which he charges to any patient for the professional service rendered, with recognition of the fact that a duly constituted local or state medical society committee of his peers may appropriately review and pass upon the equity and justice of his charge.
2. “The individuals directly involved in health care (patient and physician) should be expected to recognize and fulfill their responsibilities in the insurance method of financing health care whether the premium is paid by the individual, business, or government.

(Continued on next page)

EARLY DELAWARE PHYSICIANS

VI JAMES McCALLMONT, Delaware Physician during the Revolutionary Period, 1776-1787.

Dr. James McCallmont, long a physician in New Castle, narrowly escaped walking the plank while serving in the Navy during the Revolution. He was born in Newport in 1755 of an old Delaware family originally from eastern Wales. He attended Newark Academy and then, deciding to take up the medical profession, started his studies with Dr. Matthew Wilson in Lewes. The beginning of the Revolution stirred McCallmont's patriotism, but Dr. Wilson insisted he finish his course, stressing that he could be of greatest value to the armed forces as a trained surgeon. In 1777 McCallmont entered the U. S. Navy in such a post. His ship was soon engaged in a battle with a British frigate off Long Island. McCallmont's services were needed badly after this battle, and his skill with the wounded showed he had the makings of a good surgeon.

Later as his ship was cruising in the Caribbean, it was boarded, and he was captured by Spanish pirates using a much larger vessel. He was told he must walk the plank with the other captured officers, when as a last resort he gave the Spanish captain the Masonic sign. To his surprise the Spaniard immediately responded and ordered him aside. On McCallmont's plea his brother, who was also aboard the ship, was spared too. They were put ashore in the West Indies and ended up in a Spanish prison. Finally through the efforts of the United States consul in Havana who learned of their plight, they were released.

Following the war, Dr. McCallmont settled in New Castle and built a reputation as an excellent physician. He became one of the founders of the Medical Society of Delaware. After an exciting youth, his later life was quiet, and he is said to have become so fond of reading that if a patient wanted the doctor to spend more time with him he had only to lend him a book. He was twice married, first to Mary Monro, with whom he had seven children, and later to Martha McMullen, with whom he had five more. He died in New Castle October 4, 1824.

Adapted from *Forgotten Heroes of Delaware* by W. E. Wilson, available from Deltos Press, Box 313, Cambridge, Mass., at $2.95 paper, $5.95 library buckram.

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PEER REVIEW, UTILIZATION, AND FEES

3. "Physicians have a responsibility in utilization review and quality control in order to preserve freedom in prescribing medical care.

4. "Patients must consider their medical insurance an aid in fulfilling their personal financial responsibilities for services received in order to maintain their freedom to select their services and the method through which services are provided."

IN VITRO — THYROID FUNCTION TESTS

(*Continued from page 236*)

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24. Sterling K and Brenner MA: Free thyroxine in human serum: Simplified measurement with the aid of magnesium precipitation. J Clin Invest 45: 153-163, 1966.
25. Clark F and Horn DB: Assessment of thyroid function by the combined use of the serum protein-bound iodine and resin uptake ^{131}I triiodothyronine. J Endoct 25:39-45, 1965.
26. Anderson BG: Free thyroxine in serum in relation to thyroid function. J Amer Med Assn 203:577-582, 1968.
27. Kintner EP: Free throxine factor and a PBI-T_3 uptake nomogram. Amer J Clin Path 49:599-601, 1968.

In Brief

Correct Mailing Address

The correct mailing address of AAGP Disability Plans, Inc., is Suite 504, 222 South Central Avenue, St. Louis, Missouri, 63105.

Speakers on "Ask the Doctor"

Speakers for October, 1970, on the Tuesday radio program (11:05 a.m. WDEL) produced by the Medical Society of Delaware are: October 6, Janet Kramer, M.D., *Dangerous and Narcotic Drugs;* October 13, James Aikins, M.D., *Pediatric Anesthesia;* October 20, Frank T. O'Brien, M.D., *Air Pollution;* October 27, Donald Schetman, M.D., *Skin Cancer.*

Blood Bank's Transplant Program

Advances in tissue matching and other phases of human organ transplantation will be the subject of a seminar at the annual meeting of the American Association of Blood Banks, October 27-30, 1970, at the San Francisco Hilton. Immediately preceding the meeting, October 26, the Association will conduct two simultaneous technical workshops: a laboratory workshop entitled *Quality Control in Blood Banking* and a seminar workshop, *Problems Related to Transfusion.*

The American Association of Blood Banks has established standards for blood banks and a voluntary inspection and accreditation system. It also has regional laboratories for identifying rare blood types, a rare donor file in Chicago and a national clearinghouse system which permits blood given locally to be credited to a patient in a distant city.

New Materials for Loan

The Regional Reference Department of the College of Physicians of Philadelphia Library now loans a hospital library kit, a core library, and single-concept films. The kit of materials describes the services of the Regional Medical Library and contains reprints of articles helpful to hospital libraries. The Postgraduate Medical Institute "core medical library," consisting of 49 books and 38 journals, will be circulated for a one-month period and should be requested through the Regional Reference Department. Fifty-one continuous loop cartridge 8 mm films are now available for loan. These films were produced by the National Audiovisual Center, Atlanta, Georgia, and are to be used on a Fairchild Mark IV projector. A list of titles is available upon request.

AMA Income

Burt L. Davis, M.D., chairman of the Finance Committee of the Board of Trustees of the American Medical Association, reports that for many years, the two main sources of AMA income have been advertising and dues. It has been felt for some time that dues are the most stable income source. The tax bill enacted by the last session of Congress contains a provision which levies a tax on profit from advertising in AMA publications. The government has made it obvious to the AMA — and a lot of other tax-exempt organizations — that dues income will have to be relied upon as the chief source of revenue in the future.

Another factor to consider is that both dues and advertising income are eroded by inflation, but each dollar of profit from advertising, when taxed, will actually be worth only 52 cents. Overdependence on advertising revenue would put the AMA in a dangerous financial situation. Dues are the most stable source of income to be had. If there were no outside income at all, to support the programs the AMA now has in operation, dues would have to have been $188 for 1970 — to put it another way, each of the AMA's members is receiving $188 worth of services for $70.

Certifying Exam

The American Board of Family Practice will give its second examination for certification in various centers throughout the United States. The examination will be over a two-day period on February 27-28, 1971. Deadline for receiving completed applications in the Board office is November 1, 1970. For further information write: Nicholas J. Pisacano, M.D., Secretary-Treasurer, American Board of Family Practice, Inc., University of Kentucky Medical Center, Annex No. 2, Room 229, Lexington, Kentucky, 40506.

Stop Smoking

A new recording is now available to habitual smokers who wish to stop. It incorporates a form of hypnosis described as receptive concentration used by psychiatrist Dr. Herbert Spiegel, noted for his single treatment "cure" of one out of five hard-core smokers. Dr. Spiegel is an Associate Professor of Psychiatry at Columbia University. The recording uses the same technique as the actual 45-minute person-to-person session with Dr. Spiegel.

At a recent seminar at the American Psychiatric Association meeting in San Francisco, Dr. Spiegel demonstrated his technique which he pointed out is "directed to the many people who know the danger of smoking . . . who want to stop smoking . . . who have tried and failed."

Stop Smoking, a 33 1/3 rpm high-fidelity recording, is produced by Media Medica, Inc., and can be obtained by writing to 555 Fifth Avenue, New York, N.Y., 10017. The price of the record is $5.95 plus handling charges.

Heart Association Forms New Council

A Council on the *Kidney in Cardiovascular Disease* has been established by the American Heart Association. A 350-member group, it has been functioning since 1962 as the Renal Section of the Association's Council on Circulation. This group proved that there is a definite role in nephrology for the A.H.A., particularly in the area of professional education and research.

CLINICAL NOTICES AND MEETINGS

Health Care Lecture

Claire F. Ryder, M.D., Chief, Training and Studies Branch of the PHS, Division of Comprehensive Health Planning, will lecture on *Health Care at the Crossroads* at the General Meeting of the American Association of University Women to be held at Concord Presbyterian Church, Wilmington, November 4, 1970, 1:00 p.m. The meeing is open to the public.

Course in Biomechanics

The Center for Safety, New York University, announces that the following graduate course will be available in the fall of 1970: El 8.2401 Biomechanics; Wednesdays 7-8:40 p.m., three credits given. This is a basic course designed to provide safety specialists, members of the health professions, practitioners in industry concerned with the safety, health, and efficiency problems of man at work with fundamental knowledge and practical skills necessary for the biochemical analysis, design, and improvement of man-task and man-equipment situations. For additional details contact: Professor E. R. Tichauer, The Center for Safety, Biomechanics Laboratory, 400 East 34th Street, New York, 10016.

ACOG PG Course

A postgraduate course will be given October 15, 1970, at Chalfonte-Haddon Hall in Atlantic City, N.J., at the District III Meeting of the American College of Obstetricians and Gynecologists. Those attending are invited to attend the remainder of the meeting on October 16th and 17th as guests of ACOG. For further information write: Harry Fields, M.D., Program Chairman, Postgraduate Course, ACOG, 133 South 36th Street, Philadelphia, 19104.

ISA Exhibit

The Instrument Society of America will hold its 25th Annual Conference & Exhibit on Instrumentation, Systems and Automatic Control, October 26-29, 1970, in the Civic Center, Philadelphia, Pa. For information write: Public Relations Department, Instrument Society of America, 530 William Penn Place, Pittsburgh, Pa., 15219.

ACS Meeting

The 56th Annual Clinical Congress of the American College of Surgeons will be held October 12-16, 1970, in Chicago. The headquarters hotel will be the Conrad Hilton. The program will include 18 Postgraduate Courses accredited by the Council on Medical Education of the AMA. Fellows of the College whose dues are paid to December, 1969, may register free. Non-Fellows pay $90.00. For official registration forms contact: T. E. McGinnis, American College of Surgeons, 55 East Erie Street, Chicago, Illinois, 60611.

Emergency Physicians Meeting

Th American College of Emergency Physicians will hold its Second Scientific Assembly in Las Vegas, October 18-23, 1970. Its focus will be on the delivery of primary care in the hospital emergency department. For information write: Executive Secretary, 120 West Saginaw, East Lansing, Michigan, 48823.

Birth Defects

The Second Annual Birth Defects Symposium will be held October 30-31, 1970, at the University of Florida College of Medicine. Registration fees will be waived for interns and residents. For additional information contact: Mrs. Betty L. Howard, Division of Postgraduate Education, J. Hillis Miller Health Center, Gainesville, Florida, 32601.

County Medical Congress

The 1970 meeting of the Congress of County Medical Societies is scheduled for November 6-8 at the Netherland Hilton Hotel in Cincinnati, Ohio and has been approved by the AAGP for 12 elective hours of credit. The meeting is open to all licensed physicians and medical association executives. Registration will be $30 per person including banquet and luncheon tickets.

AAP Scientific Program

A diversified scientific program featuring presentations on recent developments in the diagnosis and management of tumors in children; progress in applied genetics; obesity — biological aspects, and immunization — will highlight the 39th annual meeting of the American Academy of Pediatrics in San Francisco, October 17-22. Comprehensive scientific programs will also be presented during the meetings of the Sections on Allergy, Cardiology, Child Development, Community Pediatrics, Military Pediatrics, Pediatric Pharmacology, Surgery, and the Committee on Urology. The meeting will also feature 17 seminars, 22 round table sessions plus a full schedule of motion picture films.

ACP Courses

The American College of Physicians announces the following courses: *Neurological Aspects of Internal Medicine* to be held October 20-23, 1970, at the Duke University Medical Center, Durham, North Carolina; *New Concepts in Basic and Applied Hematology* to be held October 26-28, 1970, at the Jefferson Medical College, Philadelphia; and *Genetics for the Internist* to be held at the New York Hospital-Cornell Medical Center, New York. For further information write: Edward C. Rosenow, Jr., M.D., Executive Director, American College of Physicians, 4200 Pine Street, Philadelphia, Pa., 19104.

Deadline for Heart Grants

November 1, 1970 is the deadline for submitting applications for Grants-in-Aid to be awarded by the American Heart Association in the fiscal year beginning July 1, 1971. These are made to support and expand the research activities broadly related to cardiovascular function and disease, or to related fundamental problems. Support is available for all basic disciplines, such as physiology, biochemistry and pathology, as well as for epidemiologic and clinical investigations which bear on cardiovascular problems. For Grants-in-Aid applications write to the Research Department, American Heart Association, 44 E. 23rd Street, New York, N.Y., 10010.

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

CEPHALOTHIN Nephrotoxicity

Two cases are reported to substantiate the contention that cephalothin (Keflin) is nephrotoxic when administered in high doses to patients with preexisting renal disease. One patient, a 20-year-old woman with osteomyelitis, received a total of 4 g cephalothin intravenously over a period of approximately three weeks. The pretreatment creatinine clearance was 52 ml/min. On the 22nd day of treatment the creatinine clearance was 25 ml/min, and the antibiotic was withdrawn. A renal biopsy showed severe tubular damage. The patient was discharged from hospital on the 43rd day with a creatinine clearance of 45 ml/min. Two months later the creatinine clearance was 60 ml/min. The second patient, a 39-year-old man, received a cadaveric kidney transplant. The creatinine clearance was 15 ml/min. during the first postoperative day and 36 ml/min during the second day. At this time the patient developed clinical evidence of pneumonia, and cephalothin in a dosage of 100 mg/kg/24 hr. was administered intraveneously. The following day the creatinine clearance fell to 5 to 10 ml/min. No improvement in renal function was noted until three days after the antibiotic was discontinued. Creatinine clearance remained relatively stable (40 to 50 ml/min) until the 18th postoperative day, at which time cephalothin therapy was resumed. The antibiotic was given intramuscularly in a dosage of 50 mg/kg/24 hr. During the next seven days rapid and progressive deterioration of renal function occurred. The creatinine clearance fell to 2 to 4 ml/min, and the patient died. A renal biopsy obtained on the 25th hospital day revealed *severe tubular damage*. There was no evidence of rejection arteritis.

Pickering MJ, et al: Southern Med J 63:426, 1970.

TRICYCLIC ANTIDEPRESSANTS — Seizures

Analysis of the case histories of nine patients who experienced seizures shortly after starting tricyclic antidepressant drugs showed that the following predisposing factors were present in all cases: previous or family history of epilepsy, pre-existing brain damage, cerebral arteriosclerosis, alcoholism, withdrawal of barbiturates, and a history of previous electroconvulsive therapy. The drugs given were amitriptyline alone in five cases, amitriptyline with perphenazine in one, imipramine in two, and protriptyline in one. Two of the patients were also taking *chlordiazepoxide*. Before prescribing antidepressant drugs, the above factors predisposing to seizures should be sought in the patient's history. If any is present, prophylactic anticonvulsant medication is indicated. From this limited experience, chlordiazepoxide seems *inadequate* to counteract the convulsive effect of antidepressant drugs.

Dallos V. and Heathfield K.: British M J 4:80, 1969.

METHOXYFLURANE-TETRACYCLINE—Renal Failure

Unusual nephropathy associated with methoxyflurane anesthesia has been noted. Tetracycline hydrochloride has also been implicated as a possible causal factor in the development of renal failure. At the Robert Parker Hospital, Sayre, Pa., during an 18-month period, 115 patients had abdominal or thoracic surgery after the administration of methoxyflurane for anesthesia. Seven patients also received tetracycline hydrochloride immediately before or after surgery. *Three of these patients died*, and an autopsy showed numerous calcium oxalate crystals in the kidneys. Of the remaining four patients, two had increasing BUN levels and two had no evidence of renal dysfunction. Of 108 patients who either received methoxyflurane with no antibiotics or the anesthetic agent with antibiotics other than tetracycline, none developed evidence of renal dysfunction. Forty patients received tetracycline after spinal anesthesia without evidence of renal dysfunction postoperatively. The author states: "It is likely that methoxyflurane and tetracyline, when administered concurrently, may seriously impair renal function leading to death."

Kuzucu EY: JAMA 211:1162, 1970.

THE FORUM

Environment And Health

CLEANER AIR WEEK, OCTOBER 18-24

Jere Hoover

Perhaps no national topic of today has such profound implications and far-reaching effects as that of environmental degradation. Although the problem has long been with us, it has been only within the past decade that serious transgressions against nature have become numerous and serious enough to cause concern over public safety.

In order to educate the layman regarding the facts of air pollution, the Air Pollution Control Association (APCA) in 1949 established the annual observance of Cleaner Air Week. The APCA, a non-profit organization supported by membership, has established an award for the most effective presentation by a community group in observance of this event.

This year will be the initial state-wide observance for Delaware. The Cleaner Air Week Committee for Delaware consists of elected officials, industrial representatives, citizen organizations, educators, physicians, various state agencies and the Delaware Tuberculosis and Health Society. Governor Russell Peterson will serve in the capacity of Honorary Chairman. Though still in the early planning stages at this writing, it appears that the week will be marked with a limited number of activities to insure a successfully strong initial observance.

The physicians in Delaware can help tremendously with this observance through patient education. Distribution of pamphlets in waiting rooms, casual chats while examining, and a basic working knowledge of the medical aspects of air pollution all are ways by which the physician can induce his patients to consider air pollution not as an occasional inconvenience, but as a constant menace to their enjoyment of life.

The major threat from air pollution is not economic loss or dirty laundry. It is health. This is the common denominator. As the key person in any individual's health concerns, the physician holds a place of responsibility. He is a strong link between dirty skies and dirty lungs. Consider this not only during Cleaner Air Week, but all year.

Mr. Hoover is Assistant Executive Director of the Delaware Tuberculosis and Health Society.

This page is sponsored by the Delaware Tuberculosis and Health Society.

Delaware Medical Journal

OCTOBER, 1970
VOLUME 42
NUMBER 10

Address

TO THE MEDICAL SOCIETY OF DELAWARE

Presented on October 17, 1970, 181st Annual Meeting

Henry H. Stroud, M.D., *President*

In recent years the customary "Presidential Address" at the Annual Meeting of the Medical Society of Delaware has not been given. With the increasing concern about adequate health care delivery and the poor public image of the physician, I feel a few moments are warranted to bring to the attention of the physicians of Delaware some thoughts about the position of the State Medical Society in today's muddled medical world.

Just recently I re-read Dr. Lewis B. Flinn's address to this Society in 1955 and was amazed to find how foresighted his remarks were in predicting some of our problems in medicine today, 1970. I should like to bring to your attention excerpts of Dr. Flinn's Presidential Address in 1955.

Dr. Flinn reviewed the history of the Medical Society of Delaware from the years of its inception in 1776. He stated after relating significant historical facts, "Our Society, therefore, began its career with dignity and set for itself the goal of regulating and conducting itself that the health and welfare of all the citizenry might best be nurtured."

Somewhat later Dr. Flinn asked, "With the ever increasing demands are we, as a society, assuming the responsibility and leadership in keeping with the traditions of the past? Is there a need for an active wide-awake forward-looking State Society when we have so many scientific organizations, so many specialty organizations, hospital meetings, departmental conferences, medical journals, and public health bulletins? My answer is unequivocally yes! We need to come to life!"

Three major areas which demanded urgent attention were pointed out. These included, one, postgraduate education, two, public relations, and three, extension of medical care.

In postgraduate education it was forecast that the Delaware Academy of Medicine and the University of Delaware should be of great assistance in providing programs for continuing education for the physicians throughout Delaware. Dr. Flinn pointed out that it was most important that physicians be stimulated to attend conferences, rounds, and meetings, and the need for health forums throughout the State was mentioned.

In the second area for concern in 1955, and I quote from Dr. Flinn, "In the field of public relations we really need to take a new look. Unfortunately it has become all too clear that many of the legislators and a not inconsiderable number of other people do not hold physicians in very high esteem." It was pointed out that the poor public image of physicians was due in part to misconduct on the part of a few doctors, to the fact that many physicians did not give patients and the public generally, as much consideration as is properly due them, and in part to complacency.

"Another area of great urgency and closely tied with public relations is the extension of medical care," Dr. Flinn observed. "This includes adequate physician coverage. There are areas within the City of Wilmington and in certain rural areas where such coverage is inadequate." Dr. Flinn in regard to improved and more available care for the medically indigent asked, "Should we not take the initiative?"

Dr. Flinn also noted in this address in 1955 that attention must be given to the extension of voluntary health insurance. I quote, "Here again we must take the initiative and have courage to face the facts of a rapidly changing economy and of the present social revolution. We must not look backward; we must not, on the other hand, be stampeded."

"The time has passed when a young physician can safely go about his own practice oblivious of the areas for concern discussed," felt Dr. Flinn in 1955. "These problems may not be as interesting as a clinical pathological conference, but if not given serious thought and properly solved, the freedom and individuality of the practicing physician may well disappear."

This markedly prophetic warning of 1955 is a definite threat today. If we as physicians do not unite, working through our own corporation, the Medical Society of Delaware, we may all be practicing according to government rules before long. In considering the far more serious problems we face today than in 1955 I feel our efforts should be intensified through the Medical Society of Delaware in the following areas:

1. *Continuing education.* The University of Delaware and Jefferson Medical College working with the Wilmington Medical Center and your State Society have developed excellent continuing educational programs throughout the State. While most programs are well attended, a number of physicians do not take advantage of the programs offered. Since only physicians can evaluate the capability and adequacy of medical practice of other physicians, the Peer Review and Professional Evaluation Committee of the State Medical Society was formed with the purpose of initially assuring that a high quality of medical care is provided everyone at a reasonable cost. An additional purpose of this committee, to be further developed in the future, will be the prodding of those few physicians who fail to continue their professional education throughout life. Although most physicians have taken an interest and pride in keeping abreast of the advances in their field, there still remain those few in each area of practice for whom certain minimal levels of postgraduate education must be prescribed in order that they will remain current in their medical knowledge. The Peer Review and Professional Evaluation Committee must be enlarged and utilized to the fullest to assure that all physicians continue their education and do actually provide the highest quality medical care.

2. *Public relations.* I agree with Dr. Flinn that it is the responsibility of each physician to improve the image of physicians generally by exemplary conduct. In this regard the most important method of improving public relations is by the physician's demonstration of a sincere willingness to respond promptly to patients in need. In addition he should participate in community projects, politics, church activities, and other fields not now allied with medicine. We must show our concern for our patients and the community in which they live.

3. *Extension of medical care.* Today the

need for more equable availability of access to medical care is more obvious than ever before. In the recent past too few physicians have become interested and active in planning for alternative methods of delivery of health care from the time-worn, fee-for-service solo or partnership practice. In the past year or two a few more physicians have become involved in this area, but many more need be. We as physicians must become more imaginative in developing methods of delivery of health care that will assure equal access and quality for all citizens of the State of Delaware. Combined with this is the need to provide a prepaid type of insurance for all which may be in part privately supported, and for the medically indigent State supported, to assure that all persons have equal access to the highest quality medical care without regard to ability to pay. With the government threat of a national compulsory health insurance, we must work actively with Blue Cross-Blue Shield of Delaware, Inc. and the Department of Health and Social Services, to provide a physician-designed type of prepaid health insurance that will be acceptable to all.

During this past year I have not become discouraged, but, on the contrary, encouraged because of the increasing interest manifested in all these areas by some members of the Medical Society of Delaware. We have had a great number of physicians who have worked diligently throughout the year, and I thank them for their interest, their efforts, and their support. I do hope more physicians will become actively involved in the work of the Medical Society so that we may improve our public relations and will continue to plan and deliver excellent medical care for the people of the State of Delaware. Again, I quote Dr. Flinn, "Our Society began its career with dignity and set for itself the goal of regulating and conducting itself that the health and welfare of all the citizenry might be nurtured." Let us continue to do just this.

PEER REVIEW PROGRESS NOTE

In addition to the four established guidelines already publicized in a recent newsletter, the Peer Review and Professional Evaluation Committee of the Medical Society of Delaware will soon be acting on new tentative guidelines including:

"When a pattern of practice is encountered in which a patient is seen in home or office more than four times a month for a period of three consecutive months, the medical necessity for subsequent such visits at that frequency must be documented by the physician." Also:

"While it is a recognized and accepted pattern of practice to perform periodic (annual) diagnostic re-evaluation of patients under regular treatment for some chronic diseases, the physician and his patient must not equate this service with a *routine* annual physical examination, which is not a covered service under Medicare."

OUTPATIENT GYNECOLOGICAL SURGERY

• A study of 135 cases demonstrates that outpatient gynecological surgery is medically safe and acceptable, not only to the patient, physician and hospital administration, but also to most insurance carriers. The saving in time and costs to all concerned is considerable.

John M. Levinson, M.D.

In order to provide quality health care, a physician must not only practice good medicine in the traditional sense, but must also direct his attention to the cost to the patient, and to the proper utilization of our overburdened hospitals. Any procedure that can be done effectively on an outpatient basis — rather than in the usual fashion of admitting the patient one day, operating the following, and discharging the next, or later — saves a minimum of two hospital days.

When malignancy is suspected, outpatient operation provides definitive diagnosis earlier, thus hastening treatment and shortening the period of anxiously awaiting to be admitted for the diagnostic surgical procedure. If malignant disease is found, then an urgent admission has highest priority. Outpatient surgery thus allows personnel and facilities to be better employed with immense savings in time and money, both for patients and third parties.

The practice of gynecology readily lends itself to these important principles for outpatient treatment. As long ago as January 3, 1924, Howard A. Kelly presented a paper before the Obstetrical Society of Philadelphia entitled, "Curettage Without Anesthesia on the Office Table."[1] Since then others have found outpatient gynecological procedures under local or general anesthesia to be medically safe when conducted with good medical and surgical judgment.[2-7]

This study reports 135 consecutive outpatients operated upon by me at the Memorial and Wilmington General Divisions, Wilmington Medical Center, from December 1967 through January 1970.

Patients Operated Under Local Anesthesia

These patients ranged from age thirteen through eighty-two. The only contraindications were patient apprehension regarding performance of a surgical procedure under local anesthesia, and suspicious breast lesions located deeply in a pendulous breast.

Almost all excisional breast biopsies were preceded by mammography. The wisdom of prompt diagnosis of breast lesions is obvious. All patients operated upon for breast lesions were advised that there were several techniques for diagnosis and treatment of these diseases. Excisional biopsy of small breast lesion does *not* compromise the efficacy of ul-

Table 1

Surgical Procedures Performed Under Local Anesthesia

Excision of tumor of breast	24
Excision of tumors of breast, bilateral	2
Excision of lesion of vulva	9
Excision and fulgeration of condyloma acuminata of vulva and perineum	6
Excision of "mole" of breast	5
Excision of vaginal tumor	1
Excision of large lesion of buttock	1
Excision of lesion of lower abdominal wall	1
Excision of cyst of nipple	1
Total	50

Dr. Levinson is Associate, Department of Obstetrics and Gynecology, Wilmington Medical Center.

TABLE 2

HISTOLOGIC DIAGNOSES

Fibrocystic disease of breast	14
Fibroadenoma of breast	10
Condyloma acuminata of vulva and perineum	6
Fibroadenosis of breast	4
Intradermal nevus of breast	4
Inclusion cysts of vulva	3
Granular cell myloblastoma of vulva	2
Atrophic leukoplakia of vulva	2
Fibroma of vagina	1
Fibroepithelioma of labia minora	1
Seborrheic keratosis (basosquamous papilloma) of skin of breast	1
Seborrheic keratosis (basosquamous papilloma) of skin of abdomen	1
Intradermal nevus of buttocks	1
Benign cyst of nipple	1
Squamous cell carcinoma of vulva	1
Total	52

timate mastectomy for malignant disease.[8] Although there were no malignancies encountered in the breast surgical cases done under local anesthesia, there were four malignancies encountered in the six patients referred during the study period directly to general surgeons because of a strong suspicion of carcinoma.

Patients scheduled for procedures under local anesthesia received no preoperative preparation. The anesthesia used was in the form of local infiltration, field block, or pudendal block using procaine hydrochloride (Procaine — Abbott), mepivacaine hydrochloride (Carbocaine — Winthrop) or lidocaine (Xylocaine — Astra). All anesthetic agents were used without additives. Occasionally a nurse assistant was required. Subcuticular suture was the usual method of closure.

Postoperative Care

After surgery, all patients were discharged immediately from the outpatient department. Return to normal activity occurred later that day or the following. Only a few patients required more than aspirin for analgesia and simple measures easily self administered such as sitz baths after vulvar or perineal surgery. All patients were reexamined within ten days, their pathology explained to them and further therapy planned as needed. There were no complications in the group.

General Anesthesia

Patients to receive general anesthesia were carefully selected so as to exclude from outpatient surgery those with diabetes mellitus, severe hypertensive cardiovascular disease or those with marked obesity. In this group of inpatients preoperative evaluation and close postoperative observation are desirable if complications are to be kept at a minimum. Two patients with histories of being "bleeders" were studied before surgery by appropriate outpatient consultation. The ages ranged from seventeen through fifty-nine. Patients admitted for outpatient procedures were n.p.o. for a minimum of six hours. Hemoglobin, hematocrit, and urinalysis were performed preoperatively. Premedication, usually consisted of meperidine hydrochloride, 50 mg, and atropine sulfate, 0.4 mg. One hour later the patient was checked before proceding to

TABLE 3

SURGICAL PROCEDURES PERFORMED UNDER GENERAL ANESTHESIA

D&C with cervical biopsy	55
D&C with cold-knife conization of cervix	19
D&C, cervical biopsy and excisional breast biopsy	2
D&C	1
D&C and trachelorrhaphy	1
D&C, cervical biopsy and lysis of congenital vaginal stricture	1
D&C and hymenectomy	1
D&C and removal of submucous uterine fibroid	1
Excision of multiple cysts of vulva and perineum	1
Cervical conization with fulgeration and curettage of vulva, vagina and perineum for condyloma acuminata	1
Excisional biopsy of breast	1
Bartholin's cystectomy, bilateral	1
Total	85

Table 4

Histologic Diagnoses

Cervicitis, chronic	69
Endometrium, proliferative	36
Endometrium, secretory	30
Endocervical polyps	7
Cervicitis, severe	5
Endometrium, atrophic	4
Endometrial polyps	4
Endocervicitis, chronic cystic	2
Endometrium, mixed proliferative and secretory	2
Endocervicitis, severe polypoid	2
Endometrial hyperplasia, adenomatous type	2
Fibrocystic disease of breast	2
Bartholin's cyst	2
Endometrium, cystic hyperplasia	2
Fibroadenoma of breast	1
Fibroma of vagina	1
Endometrium with necrotic decidua and villi	1
Hymenal tissue	1
Condyloma acuminata of cervix, vagina, vulvar and perineum	1
Cervical dysplasia	1
Sebaceous cysts of vulva and perineum	1
Uterine fibroid, submucous type	1
Squamous cell carcinoma of cervix, invasive	1
Endometritis, chronic	1
Endometrium, insufficient for study	1
Total	180

the operating room. The usual combination of anesthesia was thiopental sodium and nitrous oxide. In no cases was a preoperative enema given or shaving of the vulva or perineum done.

Patients were observed in the recovery room and outpatient facilities from one and a half to three hours and then discharged in the company of a responsible adult. After being driven to their homes, they remained at bedrest until the following day.

Five patients received oral analgesics for dysmenorrhea the first night following their procedures. Two patients who had cold knife conization with circumferential chromic sutures had sufficient vaginal hemorrhage at seven and ten days postoperatively to require office examination and vaginal packing. This incidence of excessive late postoperative bleeding is the same as in those patients normally hospitalized for this procedure. One patient who misunderstood her preoperative instructions and was n.p.o. for twenty hours preoperatively was so extremely weak and nauseated postoperatively that she required admission overnight in the hospital for intravenous feedings and observation. Three patients with Class III Papanicolaou smears were operated upon as outpatients.

No emergency patient with an incomplete abortion was considered for an outpatient D & C. These patients have often had considerable blood loss, or have full stomachs precluding immediate general anesthesia, so that inpatient observation until surgery can be safely performed is indicated. In addition, even when outpatient department D & C seemed suitable, some patients expressed a preference for a day or two of rest in the hospital before returning to a busy family environment.

Several patients refused outpatient procedures because their insurance carriers would not pay for procedures unless performed during a hospital admission.

Discussion

The results of this study thoroughly demonstrate that outpatient gynecologic surgery is medically safe and acceptable, not only to the patient, physician and hospital administration, but also to most insurance carriers. The cases listed here were reviewed with a representative of Blue Cross and Blue Shield of Delaware, Inc.[9] It was estimated that if these 135 patients had been admitted to the hospital for the same surgical procedures, they would have accumulated hospital bills in excess of $25,000, an expenditure far greater than the total expenditure for the same procedures performed as outpatients. In this series it is conservatively estimated that patients and insurance carriers were saved approximately $15,000. There was also marked short-

(*Continued on page 267*)

ALVEOLAR HYPOVENTILATION AND BENIGN INCREASED INTRA-CRANIAL PRESSURE

•Decrease in ventilation can cause increased intracranial pressure. In this paper an illustrative case is presented.

BERESFORD M. SWAN, M.D.

The syndrome of alveolar hypoventilation as described and defined by Fisherman et al[1] is manifested by (a) respiratory center unresponsiveness (voluntary hyperventilation yields and increased pO_2 and decreased pCO_2), (b) hypercapnia and hypoxemia, (c) congestive heart failure, and (d) polycythemia. The syndrome may occur with abnormal lungs, as seen in chronic obstructive airway disease, or in normal lungs. In normal lungs it can result only if there is insufficient ventilatory drive. The latter can occur with four derangements: (1) abnormal respiratory center stimuli (Cheyne-Stokes phenomenon), (2) abnormal respiratory center depression whether anatomic (bulbar poliomyelitis, vascular thrombosis[2]) or physiologic as occurs with changes in the chemical milieu, (3) abnormal neuromuscular coordination (poliomyelitis[3], myasthenia gravis), (4) abnormal chest bellows (encasement of the lung by inelastic tissue,[4] obesity,[5-8] ankylosing spondylitis,[9] kyphoscoliosis[10]).

Regardless of the anatomic status of the lungs, hypoxemia rather than hypercapnia is primarily responsible for the dire consequences of the syndrome. Hypoxemia imposes a circulatory burden on the right side of the heart secondary to increased cardiac output, pulmonary hypertension, hypervolemia and polycythemia.

Another not too uncommon sequela of alveolar hypoventilation is increased intracranial pressure. This complication is infrequently reported in the medical literature.

The events leading to an increase in cerebrospinal pressure are not definitely known. The earliest report of increased intracranial pressure in association with this syndrome is that of Cameron[11] in 1933. An excellent review of alveolar hypoventilation with increased intracranial pressure was presented by Carter et al[12] in 1957. The possibility of increased venous pressure as etiologic has been postulated (recall the Queckenstadt maneuver). But high venous pressure results from right-sided heart failure, superior vena cava obstruction, or bilateral jugular vein ligation (often performed during neck dissection surgery for removal of malignant tissue);[13] yet papilledema is not a part of these processes. Polycythemia per se is not a major factor in the mechanism leading to increased intracranial pressure. In a review of polycythemia vera by Tinney, Hall and Giffin only four cases of papilledema were noted.[15] Many observers believe that hypercapnia per se leads to increased intracranial pressure. Simpson in 1948 presented three cases of emphysema with increased intracranial pressure and papilledema and gave evidence that hypercapnia was responsible for the latter.[16] He gave 7% CO_2 and 93% O_2 to six normal patients and in each case obtained a significant rise in cere-

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brospinal pressure. He suggested that CO_2 accumulation and diminished O_2 in arterial blood produced cerebral vasodilation adequate to raise the cerebrospinal fluid pressure. Wolfe[16] and Dixon[17] earlier demonstrated in animals that by increasing the blood CO_2 of pial vessels, one could increase the rate of secretion of cerebrospinal fluids. More recently Kety using the nitrous oxide method of cerebral flow determination demonstrated an increase in cerebral flow in man due to an increase in CO_2.[19] This effect was thought to be due to cerebral vasodilation. Goldensohn noted in anesthetized dogs an increase in cerebrospinal fluid pressure produced by inhalation of high concentrations of CO_2 and also the accumulation of endogenous CO_2.

The following case is presented as an illustration of high cerebrospinal fluid pressure, deteriorating consciousness and focal abnormal neurologic signs all secondary to alveolar hypoventilation, with striking clinical improvement when the latter process was corrected.

Case Report

A 50-year-old woman presented to the Emergency Room of the Wilmington Medical Center on September 6, 1967 with complaints of constant drowsiness, headache, dizziness, blurred vision, unsteady gait, back pain and nervousness. These complaints had been present for about two years. Her past history was significant in that she was admitted to another hospital 17 months previously with frontal headaches, weakness, drowsiness and vomiting. She was then considered to have a brain tumor or focal encephalitis. A spinal tap done at that time revealed an opening pressure of 320 mm/H_2O; repeat tap before discharge was 190 mm/H_2O. A brain scan was abnormal only because of increased uptake of the radioactive material in extracranial structures. EKG showed marked cardiac enlargement with pulmonary vascular congestion. The hemoglobin and hematocrit at that time were 15.8 gm/100 ml and 54.8%. The patient was given a discharge diagnosis of "focal encephalitis." She was readmitted nine months later to the same hospital because of lethargy, headaches, dizziness, numbness, unsteady gait and vertical nystagmus. Brain scan was suggestive of a subdural hematoma. Pneumoencephalogram and right carotid arteriogram were normal. The hemoglobin and hematocrit were elevated to 17.0 gm/100 ml and 50%. She was discharged on that occasion with the diagnoses of exogenous obesity and an undetermined brain lesion. During 1966-1967 she had three admissions for viral respiratory infections and bronchitis. Pulmonary function studies performed during one of these admissions showed severe restrictive disease and moderate obstructive disease with a vital capacity decreased to 57% of normal with FEV_1 1315, and FEV_1/VC 88%. From August 27, 1967 she was followed as an outpatient. Her usual complaints throughout this period were related to congestive heart failure, obesity, secondary polycythemia, narcolepsy, and an organic brain lesion. She never improved under treatment and frequently went to the emergency room complaining of drowsiness, headaches, dizziness, blurred vision, and unsteady gait.

Review of systems at the most recent admission revealed no history of head trauma or alcoholism. She had enjoyed good health and usually weighed 115 lbs. until three to four years prior to admission during which she had gained 40-50 lbs. The only other pertinent finding was that she had a history of frequent colds and smoked one pack of cigarettes a day most of her adult life.

Physical examination on admission revealed an obese, lethargic female, aroused by deep pain. Vital signs were: B.P. 140/90 mm/Hg; pulse 90/min and regular; respirations 20/min and very shallow; temperature, 98.6°F. Height was 5 feet 1 inch and weight 180 lbs. The head was normocephalic and devoid of evidence of trauma. Eye examination showed her pupils equal and reactive to light. The conjunctivae and lids were edematous, as well. Extraocular muscles were difficult to evaluate, for the eyes moved at random with a noticeable vertical nystagmus. By funduscopic examination, the disc margins were blurred and the venules were engorged and markedly dilated. There was cyanosis of the mucous membranes of the mouth and throat.

The neck was supple with full and equal carotid pulses. There was no cervical adenopathy or thyromegaly. There were rales at both lung bases and markedly decreased respiratory excursion. The left border of cardiac dullness was percussed to the anterior axillary line in the 5th intercostal space. There were no murmurs; P_2 was greater than A_2 and was widely split. There were no thrills or heaves. There was a well healed cholecystectomy scar. Bowel sounds were active; the liver and spleen were not palpated. There was bilateral CVA tenderness. Pelvic and rectal examinations were negative. There was no edema of the extremities; the skin showed tinea versicolor. Neurologic examination revealed a somnolent apathetic female who responded to deep pain. Cranial nerves were difficult to evaluate because of her marked somnolence. Sensory function was intact, and the patient moved all four extremities. DTR's were equal throughout; the Babinski test was positive bilaterally.

Pertinent Laboratory Data

Pertinent data were as follows: RBC, 5.31 million/mm^3; hemoglobin, 14.5 gm/100 ml; hematocrit, 44%. WBC were 15,000/mm^3 with 82% polymorphonuclears and 18% lymphocytes. The urine was cloudy yellow with S.G. of 1.013, acid recation, 2+ albumin, and 10-12 WBC with WBC clumps. The VDRL was reactive 1:2, R.A. Latex Fixation was positive and L.E. prep negative. BUN was 94 mg and later 116 mg/100 ml and sugar, 111 mg/100 ml. CO_2 was 21; Cl, 92; Na, 131; and K, 6.0 mEq/liter. Creatinine was 1.4; Ca, 8.0 mg; phosphorus, 3.5; and PBI, 3.6 mg/100 ml. Urine coproporphyrins and uroporphyrins were normal. Alkaline phosphatase was 12.2 Bodansky units. Total protein was 6.7 with an albumin of 2.9, and globulin of 3.8 gm/100 ml. Total bilirubin was 0.1 mg/100 ml. Urine culture grew out enterococcus with plate count greater than 10^5 colonies. EKG revealed an abnormal tracing with pulmonale and right axis deviation. Electrical position was vertical with clockwise rotation. Chest x-ray showed cardiomegaly with marked passive congestion with dilated pulmonary arteries. Skull and abdominal x-rays were normal.

The working diagnostic impressions at that time were: 1) narcosis, probably secondary to cerebral pathology or hypoventilation, 2) congestive failure with cor pulmonale, 3) uremia 2° to pyelonephritis, and 4) exogenous obesity.

Hospital Course

The patient's mental condition persisted despite supportive care. On day two she became febrile. E. Coli was subsequently identified in her urine. An ophthalmology consultant concurred with the basic findings of congestion of the retinal vessels and suggested hypercapnia or hypoxemia as the probable cause. It was noted that the patient's neurological signs were changing, and neurological and neurosurgical consultation was obtained, but her clinical condition was too precarious to proceed with the proposed arteriogram and pneumoencephalogram. With the lack of evidence of papilledema, a lumbar puncture was done on the third day. The opening pressure after five minutes was 450, and the closing pressure was 430 mm/H_2O. The fluid was clear and sterile. The patient was treated for her urinary infection with appropriate antibiotics, and her congestive failure by standard techniques. Oxygen therapy at 2-3 L/min was given because of the cyanosis and some improvement was noted but she rapidly became cyanotic again whenever this was discontinued. On the fifth hospital day, study of her arterial blood gases revealed a pH of 7.26, (normal, 7.35-7.45) pCO_2 of 60 mm/Hg (normal, 35-45 mm/Hg), pO_2 of 44 mm/Hg (normal, 90-100 mm/Hg) and calculated 0_2 saturation of 73% (normal, 98%) with a standard bicarbonate of 24.2 mEq/liter (normal 23 mEq/liter). These findings were thought compatible with uncompensated respiratory acidosis probably due to hypoventilation. Subsequently a tracheostomy was performed, and IPPB was given to improve her ventilation.

The patient's ventilation was so severely depressed that she did not trigger the Bennett machine on her own, so automatic cycling was used with dramatic improvement. Three days later repeat studies showed that hypercapnia, anoxia and acidosis persisted at rest. With 40% oxygen by tracheal mask there was

TABLE I

PULMONARY FUNCTION TESTS

Age 50 Height (cm) 155 Weight (lbs.) 140 B.S.A. (M^2) 1.62

Date 9/26/67 Temp. 22°	PREDICTED	BEFORE BRONCHODILATOR	AFTER BRONCHODILATOR
Vital Capacity (c.c.)	2605	1360	1405
Expiratory Reserve (c.c.)	—	270	500
Maximum Breathing Capacity (L./Min.)	77	27	37
Maximum Expiratory Flow Rate (MEFR) (Based on 1 L. measured)	4 to 6 L/Sec.	1.8	2.1
Blood Pressure	—	120/80	120/80
Pulse	—	96	100

Note: Above measurements at B.T.P.S. and in sitting position.

Bronchodilator Used: 5 drops Isuprel 1:2000 1 c.c. saline with oxygen in chamber.

Walking Index .... Normal = 0.25 or less
Liters of Air to Walk 1 Minute ....
Liters of Air per M^2 to Walk 1 Minute ....

Patient's Estimation of Dyspnea after Walking 180 Ft. Per Min. for 4 Minutes = None, 1+, 2+, 3+, 4+.

improvement in 0_2 saturation and anoxia. 0_2 saturation rose from 65% to 85% with the $p0_2$ from 33 to 51 mm/Hg, but hypercapnia with $pC0_2$ 66 and acidosis with pH 7.28 persisted. When she was given IPPB with 40% 0_2 and automatic cycling for five minutes, the pH rose to 7.32, $pC0_2$ fell to 59 mm/Hg, $p0_2$ went to 76 mm/Hg, and 0_2 saturation rose to 96%, demonstrating marked improvement in all parameters with adequate ventilation.

The patient was then maintained on IPPB two hours on and one hour off, and she progressively improved with disappearance of cyanosis, greater alertness, and responsiveness. Intermittent blood gas analyses showed that while on IPPB there was no acidosis, but with resumption of room air breathing there were a consistent, precipitous drop in oxygen tension and return of respiratory acidosis.

The BUN rapidly declined from a maximum of 116 mg/100 ml within nine days to a level of 15 mg/100 ml with appropriate antibiotic therapy for her pyelonephritis. During this period she was digitalized and given diuretics and aminophylline, all with good effect. When she was able partially to sustain her condition without IPPB, a lumbar tap was repeated. With a five-minute waiting period, normal pressures were obtained with an opening pressure of 150 and a closing pressure of 130 mm/H_2O. During this treatment period the patient lost 28 pounds of weight.

She was placed on Emivan (U.S. Vitamin & Pharm. Corp.) orally 66 mg/day, and her drowsiness disappeared, and she was able to ambulate without difficulty. After full clinical recovery, spirometric and residual volume studies were performed to rule out intrinsic pulmonary disease. Tables I and II give these data, which were interpreted as follows:

"During the pulmonary function test the spirogram did not show any air trapping, nor any elevation of the end expiratory point. There was some slight leaking of air through the tracheostomy tube. The FEV_1 is 1135 (normal 1400) and the FEV_1/V.C. ratio 83% (normal 75%). The vital capacity is 52% of normal before and 54% after Isuprel (Winthrop). The MBC is 36% of normal before and 48% after Isuprel. The MEFR is 45% of normal before and 52% after Isuprel.

TABLE II
RESIDUAL VOLUME STUDY

Date 9/27/67	PREDICTED	OBSERVED
Functional Residual Capacity (c.c.)	—	1235
Residual Volume (c.c.c.)	1255	965
Total Lung Capacity (c.c.)	3860	2325
$\frac{\text{R.V.}}{\text{T.L.C.}}$ %	33%	42%
Index of Intra Pulmonary Mixing	2.5% or less	2.2%

"These findings indicated serious restrictive disease, especially as shown by the vital capacity of 52% of normal. This could be due to weakness of the respiratory muscles, to pulmonary congestion or to pulmonary fibrosis. There is severe obstructive disease with overall function, based on the MBC at 36% of normal.

"In Table II it is of note that the residual volume is 77% of the predicted normal, and the total lung capacity 60% of predicted normal. These volumes rule out hyperinflation of the lung or any disturbance of gas mixing within the lung. From all of the studies performed it is possible to demonstrate ventilatory volumes that are considerably decreased with combined obstructive and restrictive disease. There is no evidence for advanced chronic bronchitis or emphysema, but the ventilatory volumes are compatible with bronchitis. The restrictive disease could be due to weakness and pulmonary congestion on the basis of heart failure."*

Discussion

This patient demonstrates the syndrome of alveolar hypoventilation as defined earlier. One major component, ie, polycythemia, is lacking probably because of the patient's severe uremia and renal infection, but polycythemia had been present prior to the illness described. The associated intracranial hypertension was documented.

The etiology of the alveolar hypoventilation in this particular case is not clear. It probably resulted from recurrent bronchial infection and obesity. The stress of an intercurrent pyelonephritis probably precipitated her severe respiratory insufficiency. Her poor ventilatory reserve had probably been present at least since the time of her initial admission with neurologic complaints in February 1966.

It is clear that the increased intracranial pressure was due to her alveolar hypoventilation as it corrected when the latter was properly treated. This phenomenon is well documented and is not a rare event in the course of respiratory insufficiency. Stevens in 1963 summarized the American and English literature on this phenomenon and reported on 20 well-documented cases of papilledema and increased intracranial pressure during the course of chronic pulmonary disease.[21] Simpson reported this phenomenon in 10% of 108 cases of severe chronic pulmonary insufficiency,[22] and Flint reported papilledema in nine of 70 patients whose fundi were examined.[23]

The pathophysiology of increased intracranial pressure has been previously mentioned. In general, respiratory failure gives diffuse neurologic signs, either because of hypoxemia or CO_2 narcosis. However, there are now six cases in the literature, reported by Pitt et al, that presented with focal signs, papilledema and increased intracranial pressure.[24] It is obviously important to recognize the phenomenon as a cause of deteriorating consciousness with or without focal signs, as opposed to a space occupying lesion, for the morbidity is increased when angiography and ventriculography are performed for the diagnosis of a space occupying lesion.

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*Interpretation by James C. Hofford, M.D., Director, Pulmonary Function Laboratory, Wilmington Medical Center.

The treatment of this syndrome is aimed at correction of the fault in ventilation and its sequelae, with vigorous assisted mechanical ventilation, digitalis, diuretics and salt restriction. Emivan was tried because it is postulated by Said that this respiratory stimulant by increasing tidal volume, creates a fall in pCO_2 with an increase in arterial pO_2 and consequent arousing effects.[25] Further, Vogel et al in a similar case of hypoventilation using pulmonary artery catheterization demonstrated a drop in pulmonary artery pressure and an increase in pH and a slight increase in O_2 tension after Emivan infusion that proved clinically beneficial in their case.[26] Emivan was of apparent help in our case in the later course; whether it would have helped earlier is unanswerable.

Summary

A not too uncommon sequela of severe alveolar hypoventilation, increased intracranial pressure, has been discussed and presented.

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* * *

HOW DO YOU WANT YOUR COAL STEAK?

A number of protein discoveries have been made of late — some at this point laboratory curiosities, others verging on science fiction. Receiving considerable attention is the prospect of producing edible protein by growing single-cell organisms on natural gas, petroleum, vegetable wastes or even coal. The Dutch Shell Group has found a bacterium which uses the natural gas, methane, as its sole source of energy for reproduction. These bacteria contain about 50% protein and, according to U. S. nutritionist Dr. Nevin Scrimshaw: "There is little doubt that wholesome and nutritious single cell products utilizing energy from petroleum or natural gas can be developed and produced in almost unlimited quantities within a decade."

The potential advantages are many: the relative abundance of petroleum, even in food-short countries; the independence from climatic uncertainties; the small space requirement; the need for only a few technicians; and the rapid growth rate. All these suggest the possibility of unlimited man-made protein production. Most of the world's large petroleum companies are deeply engrossed in protein projects. Some are actively collaborating with major food companies, such as the current Esso/Nestle liaison. The president of Gulf Oil recently predicted that protein food will become a significant by-product of the oil industry.

Much work remains, however, to improve palatability and to find ways of producing economically feasible products.

Malnutrition and National Development, Alan D. Berg, Foreign Affairs, Oct. '67.

EARLY DELAWARE PHYSICIANS

VII MATTHEW WILSON, Delaware Physician during the Revolutionary Period, 1776-1787.

Dr. Matthew Wilson of Lewes was not only a physician, a Presbyterian preacher and an educator, he was also a talented author of magazine articles. He was born in Chester County, Pennsylvania, in 1729 and educated at New London Academy, then under the direction of the Rev. Dr. Francis Alison. He became a Presbyterian minister, but finding the remuneration received by ministers was scarcely enough to live on, he studied medicine as well under Dr. Alexander McDowell in Philadelphia.

He settled in Lewes, where he spent the rest of his life as a preacher and a doctor. He gained prominence in Presbyterian circles and was the principal member of a committee that prepared the new constitution of the Presbyterian Church in the United States. In his later years he set up an academy in Lewes for teaching medicine which attracted many students from all parts of the East. As a textbook he wrote what he called "A Therapeutic Alphabet," which was never published but which he had his students copy.

Like most Presbyterians, he was a leader in the movement for opposing what he considered the oppressive actions of Great Britain toward the colonies. At the time of the Stamp Act he worked hard to organize the members of his church and the people of Lewes against its provisions. He succeeded so well that when ships loaded with tea for Philadelphia arrived at the mouth of the Delaware the people of Lewes stopped them and confiscated the tea.

By this time he had become a proficient writer of magazine articles, so he dashed off one for the American Magazine — edited by Thomas Paine—warning against the drinking of tea and giving recipes for drinks which could be made from vegetables. He also wrote for the American Museum and for the publication Transctions of the Americn Philosophical Society, mostly on medical subjects. Among these were a history of a malignant fever which prevailed in Sussex County in 1774 and "Observations on the Severity of the Cold During the Winter of 1779-80."

Once at an auction in Lewes of the cargo of a shipwrecked vessel, he bought a cask of aniseed cordial. Inside the cask he found a large bottle of oil of rhodium and, realizing its value, he went back to the auctioneer, told him of his find and suggested that it be auctioned off again so that a price approaching its real value could be obtained. But the auctioneer, stunned by such honesty, insisted that all sales were final. Dr. Wilson sold the drug in Philadelphia for ten times what he had paid for it.

Dr. Wilson died March 31, 1790, in Lewes and was buried in the Presbyterian cemetery there.

Adapted from *Forgotten Heroes of Delaware* by W. E. Wilson, available from Deltos Press, Box 313, Cambridge, Mass., at $2.95 paper, $5.95 library buckram.

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OUTPATIENT GYNECOLOGICAL SURGERY

(*Continued from page 260*)

ening of the usual delay in scheduling inpatients because of frequent bed shortages.

It is suggested that not only gynecologists, but all physicians in surgical specialties, consider the feasibility of outpatient surgery whenever possible.

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A PSYCHIATRIST LOOKS AT STUDENT REBELLION

• **An explanation of the underlying causes for the present student dropout phenomenon and the violence which wracks our campuses along with suggestions about dealing with these perplexing young men and women.**

Graham B. Blaine, Jr., M.D.

Do we have reason to be seriously concerned about our present college and high school generation? The news media and the popular magazines would lead us to believe so. The young people themselves plead with us to "cool it" and let them alone to do "their own thing." Yet, at the same time, they force our attention towards them by their bizarre and at times violent behavior. Personally, I believe we should be concerned. A significant proportion (some who are in a position to know say as many as 300,000) are dropping out completely from established society and regularly using harmful drugs.

Another segment of the youth culture is using violent means in an attempt to destroy the structure of institutions which the vast majority of both generations feel to be necessary for the proper intellectual growth of our young people. A small number of these two groups — the dropouts and the violent ones — will become permanently crippled as a result of their behavior. Some will become addicted to narcotics. Others will die from overdosage. Others will have their minds "blown" from chronic usage. Others will be handicapped throughout their adult lives by criminal records of drug offense or assault convictions.

While the number of such victims may be small, still this is a new phenomenon. It has not characterized the rebellion of other younger generations, and for that reason we should be concerned enough to look into the origins of, and look for solutions to, the problems of today's youth and also to try to find ways of preventing future generations from becoming more deeply and harmfully involved in this kind of self-destructive behavior. For far too many, adolescent rebellion today results in permanent damage to themselves or others. Instead of a detour before achieving maturity, too often it is becoming a one-way street to unhappiness and misery.

The first place to look for an explanation for the behavior of today's youth is in the society which nurtured them and the one that faces them. Are there unique elements in these societies distinctive from those of the past which may help us understand the unique behavior which confronts us? One factor which immediately strikes us as new is the presence of affluence. Never have so many had so much. Pockets of poverty do exist, but proportionately they are smaller than in the past.

While affluence has many advantages, it also has built-in dangers. Thomas Carlyle once said, "For every one hundred men who can stand adversity, there is only one who can stand prosperity." Young people brought up in a world where everything has come easily to them begin to long for challenge and cast about for risks to take in order to test their capacities as well as their courage. Most of these risks are unnecessary, and many are risks in which the odds are stacked very high against them. Some who take drugs go on to escalate their dosage and to experiment with

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Dr. Blaine is Chief, Psychiatric Service, Harvard University Health Services.

This paper was presented at the 1970 Annual Meeting of the Delaware Academy of Medicine.

more dangerous substances in order to prove their courage to themselves and others. Fast automobile driving and irresponsible sexual behavior are other risk-taking activities engaged in by young people deprived of the challenges presented to young people of other generations by such possibilities as starvation or loss of home. Survival, even luxurious survival, is felt to be guaranteed to them by most adolescents today. The achievement of physical security for self and family is no longer an exciting goal with attached uncertainties and risks.

It may be that the dropout or hippie response to what "the Establishment" has to offer is related to affluence. Many college age men and women feel guilty about having been given so much without earning it. Their retreat to primitive living without benefit of many of the trappings presented to them by their families is a way of making a challenge for themselves. Living without cars or dormitories, without fancy clothes or soap or water is like starting from the beginning again. Growing beards and long hair is going back to nature and for some at least symbolizes contempt for what is felt to be the hypocrisy of making oneself unnaturally pretty by means of shaving and haircuts. These, of course, are only small surface manifestations of a deep-seated contempt for the hypocrisy they believe is present in the business and political world of the well-groomed adult.

The follower of the "turn on, tune in and drop out" philosophy also professes disgust with the inhumane attitudes of the older generation. He is sorely disaffected by the enormous discrepancy between the affluent and those in poverty; and he has the utmost contempt for the puritan work ethic which he sees as only a rationalization to allow the accumulation of huge backlogs of money not needed by those who earn it with consequent deprivation of the poor.

Freud defined maturity as "the ability to postpone gratification." Infants and children demand instant gratification and live by what he called 'the pleasure principle." But if maturity comes, it brings with it the capacity to tolerate some present pain in order to achieve a greater pleasure at some later time. In these days of "Fly now and pay later," the Polaroid camera, and instant mashed potatoes, it is increasingly hard to justify this Freudian principle. Partly because of this, the young tend to mock the traditional idea of hard work and adopt a carefree philosophy of living for the present, seeking immediate gratification of their sexual and other wants, demanding from drugs an instant and constant happiness, and looking for excitement in the risks involved with dangerous toxic substances.

The Response of the Activist

The activist responds to what he sees as the horrible specter of our present day society by becoming angry and hostile. He does not repress his antagonism so that it is turned inwards to manifest itself in depression, apathy, or "dropping out." Instead, he complains loudly and threatens violence. He wants reforms, but his constructive suggestions are few and are seldom very practical or imaginative. Some activists are convinced that adequate reform can only grow out of the ashes of a totally destroyed "Establishment." The activist's complaints about society are much the same as those of the dropout. Society has become dehumanized. Corporations and institutions are self-seeking, discriminatory, and oblivious of the suffering and injustice prevalent in the world. There is not enough love between individuals, and, of course, the Vietnam war is unjust because it is unnecessary. Some believe no war is ever justified, but others grant that, irrational as it may be as a problem-solving mechanism, it is at times unavoidable. But all of this group agree that everyone who dies or is injured in Vietnam is being sacrificed only for the benefit of the "Military Industrial Complex."

On the college campuses where the activists are well organized, the student body falls generally into four categories. About 58% are conformists who are glad to be part of an educational community, are fairly content with what is being offered them, and are conscientiously pursuing a well-defined goal. Another 30% are discontented; they are plugging along without much satisfaction, only partially convinced that they know where they are headed, and not at all sure that what they are doing is going to get them there. They have a lot of untapped energy available for any kind of diverting project which promises excitement.

About 10% of such a campus belongs to or sympathizes with the SDS. This group is deeply dissatisfied with college and the larger society. They want the college to be more interested in educating the deprived, and they also want it to take an active interest in the affairs of the outside world. This includes participation in the work of community agencies and also putting weight behind legislation which assists the poor and underprivileged. They do not believe in the concept that the university should be a forum for differing points of view but essentially itself, neutral. Instead, they think the university should make itself a political force, not only by publicly taking a stand on controversial issues, but also by counteracting certain forces which the group feels are evil. They believe in undermining the Armed Forces, for instance, by eliminating ROTC, and in crippling scientific research by denying the government access to university facilities or professors.

That Small Percent

Finally, at the center of the trouble there are the few — probably about 2% of the student body — whose main goal is the destruction of the university as a first step towards a national revolution. This group may give nominal support to the programs described by the reformers, but basically they do not believe that an acceptable degree of reform can be brought about within the present structure. Negotiation with this group is useless, for it is seen only as a ploy used by "the Establishment" to divert the opposition. This small group of revolutionaries, called by some "the short-hair SDS" because many of them are indistinguishable outwardly from the conservatives whom they are out to destroy, are followers of Mao, Che Guevara, and Castro. They admire these leaders and shape their philosophy and their strategy along the lines of the Communist, Socialist, and Progressive Labor parties, though there is no evidence that they are financially aided by the national or international headquarters of these organiztions.

The Procedure

The battle plan of the SDS has been quite consistent in the colleges in which they have chosen to attempt a take-over. First, a cause is found which has some support already among the students. This is publicized widely in order to gain as much help as possible from the discontented group. Then, ostensibly to force action on the issue from the administration, a building is seized. The actual purpose of the seizure is to provoke violence and cause some blood to be shed. Once this has been accomplished, all the discontented students rally against the apparent perpetrators of the violence, and a number of the conformist students also are temporarily "radicalized" out of sympathy for the few who may have been injured. At this important juncture a strike is called as a first step toward shutting down the institution. The next step, as yet not accomplished at any American university, is the enlistment of the employees and workers in the strike with the hope that this work stoppage will spread into the local community and eventually to the entire nation as it did in France.

Administrators and faculty in particular were slow to learn that negotiation is not possible when dealing with an insurrection well planned and executed by the revolutionaries. This is now better understood. The destroyers are refreshingly candid about their intention, often being willing to detail their campaign plans to the opposition several days ahead of time. It is not enough to deal directly and firmly with this group. The reformers and the discontented must be listened to and action taken on those demands which are reasonable. Depriving the revolutionaries of these allies is the most effective way to render them impotent.

The force of the anger in many of the younger generation springs from many sources. Some is attributable to the relatively permissive upbringing to which these young men and women have been subjected. Their view of authority has been influenced by their perception of their parents during childhood.

Inconsistency and softness in regard to discipline and limit-setting results in the development of a belief that authority can be bent or gotten around. It is frustrating and infuriating to meet a stone wall when one had expected from past experience to find a soft hedge with many holes in it.

A Generation of Hardships

Frustration and anger are stimulated in today's youth more than in the youth of past generations because the issues of the day are peculiarly slow in being resolved. The Depression and World War II were long and painful hardships, bringing with them more suffering and sacrifice than the Civil Rights problem or the Vietnam War, but there were more sense of movement and a belief that there was concern at all levels about finding a solution to the problems inherent in the situation. Today's students see no progress in overcoming discrimination and injustice toward Negroes, and the present war is a stagnant one with no discernible progress on the ground or at the peace table. In addition to these broad-based frustrations, a chronic dissatisfaction with the educational process is felt by a large number of students. Now that 55% of our high school students go to college rather than the 10% who did so 15 years ago, the nature of the college population has changed. Yet the colleges have not changed to meet the different kinds of needs of this new type of population. Fewer of today's students are intellectually curious, scholarly, academic types. More are practical minded, interested in directly coping with the problems of living and not as interested in studying the past or in conceptualizing, theorizing, and contemplating. Many others have no idea what they want from college. Someone told them it was "a great opportunity," but once they are there, nothing great appears and they blame the institution for not providing that indefinable something which would "turn them on" and provide them with excitement, motivation, and purpose.

All of these factors plus many more have combined to cause a chronic hostility in many of our young people; and in some it has come to the surface in the form of angry confrontation, the shouting of obscenities, a refusal to listen, and in some rare instances, physical violence. Perplexing as all this is, it is nothing to the dilemma posed by the black students who are increasingly making their needs apparent to college administrators. Attempts to eliminate discriminatory policies and to treat black and white students alike are not enough. To the Black Power contingent this is a racist attitude, for it fails to take into consideration the special needs of the black student which have resulted from past decades of oppression and injustice. Ways in which to respond to the particular needs of the blacks have not been clearly delineated in most colleges, but the institution of black studies programs and broader admissions policy for blacks are two areas being mapped out at present.

Gaining the Respect of the White Population

Black Power seems to represent a valid attempt on the part of the Negro in America to gain the respect of the white population as a means of achieving integration at a later time on the basis of this respect rather than out of white guilt, condescension, or pity. Part of the technique of gaining white respect for some Black Power groups is instilling fear. This muscle-flexing and risk-taking (in terms of provoking and exasperating whites) add to the Negro's self-esteem and feeling of power.

In addition to helping black students cope with the problems of their individual adolescence, they must also be helped to deal with the conflicts that arise from the adolescence of the black race. In this country, at this time, this group is struggling to define its identity. After such definition occurs, the Negro can take his place harmoniously within the larger culture. Rebellion and group distinctiveness are symptoms of this identity conflict. The rest of society must be patient and tolerant about these symptoms, much as parents must deal with the paradoxical, provocative behavior of their adolescent children. To do this without being angy or condescending is a difficult task indeed.

In summary, the stance of the older generation — particularly of those in positions of

(*Continued on page 274*)

Editorials

ON MEDICAL EDUCATION: A SLOGAN

We have recently heard of one gynecologic clinic which has a small sign which bears the succinct message **Ectopic Pregnancy** posted at eye level on the wall in each of its examining rooms so it must be seen by any physician examining a patient's abdomen. And we are all familiar with the **Think** signs and their amusing if a bit snide variant, **Thimk.** Should any department of medical education, especially those with intense university affiliations, be in need of an excellent motto, we would happily recommend the following wise words which come from the conclusion of a review of a new textbook of medicine by Dr. Edward Huth, Associate Editor of the *Annals of Internal Medicine.*

"The task (of a department of medicine) is not to intoxicate the impressionable with the splendors of clinical research but to teach the rigors of clinical observation and reasoning in the setting of humane care."

While we are praising slogans we'd also like to cite, with strong approval, the one on the desk of Dr. Norman Cannon, medical director of the Wilmington Medical Center:

"If all possible objections to an action must first be overcome, nothing will ever be accomplished."

B.Z.P.

CLINDAMYCIN

Clindamycin* (7-chloro-7-deoxylincomycin) is an analogue of lincomycin and like the parent drug is a narrow spectrum antibiotic effective *in vitro* and *in vivo* against the gram-positive cocci excluding the enterococci. Clindamycin appears to be more effective *in vitro* than lincomycin, therefore allowing a lower dosage of this analogue for clinical efficacy. This fact and the anticipation that there will be a lower incidence of gastrointestinal side effects with this new antibiotic represent the justification for its introduction for clinical use. Whether the lower incidence of gastrointestinal side effects reflects the lower dose required or whether it is due to some inherent property of clindamycin is not clear at this time. Clindamycin has had extensive clinical investigation in the United States and appears to be as effective as lincomycin in the treatment of infections due to streptococci, staphylococci, and pneumococci. There have not been any controlled studies comparing the efficacy of clindamycin with lincomycin so whether or not this analogue is any more effective than the parent drug is only speculative. A parenteral preparation of clindamycin is currently under clinical investigation in the United States.

The proper role of the lincomycin antibiotics in clinical medicine is in the treatment of gram-positive coccal infections in patients who are allergic to penicillin or in patients in whom a history of multiple drug allergy would leave one to anticipate a possible penicillin reaction. Lincomycin has proved to be unique in that it rarely provokes an allergic reaction.

The lincomycin antibiotics have a striking bactericidal effect against streptococci and pneumococci though occasional strains of pneumococci resistant to lincomycin have been reported. In our laboratory the lincomycin antibiotics appear to be bacteriostatic in their effect against strains of *Staphylococcus aureus*, but this contradicts the reports[1] of others in the literature. We have been unable to explain this conflict in *in vitro* results, and in fact our clinical experience with the lincomycin antibiotics confirms a high order of effectiveness against staphylococci *in vivo.*

As mentioned above, one justification for the development of clindamycin is the reported lower incidence of gastrointestinal side effects resulting from the use of this lincomycin analogue. However, to my knowledge there have been no reports in the medical literature of double blind studies in which the gastrointestinal side effects of lincomycin and clindamycin have been compared.

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*Cleocin — Upjohn

In a study[2] carried out in Wilmington in 1967, 24 normal volunteers were given varying doses of clindamycin at six-hour intervals for a period of one week. One-third of these volunteers developed some change in bowel habits varying from loose stools to frank diarrhea, but it was not necessary to discontinue this medication throughout the seven-day trial period. It should be noted that two of these eight patients with change in stool habits were receiving 2.4 grams of the drug in a 24-hour period, which is in excess of the recommended dosage of clindamycin. In a clinical study[2,3] carried out at the Wilmington Medical Center in which 44 patients were treated with clindamycin for infections of the skin, respiratory tract, bone and urinary tract, there was an incidence of diarrhea of 4.5% (two patients in 44), which is not unlike the incidence of diarrhea being reported in the advertising literature for clindamycin. However, it should be pointed out that early in the studies of lincomycin, a low incidence of diarrhea was reported[4] and subsequent clinical experience with lincomycin in this country has given evidence of severe diarrhea in a high percentage of individuals. Perhaps initial trials on patients at bed rest in the hospital are not representative of the subsequent effect upon the bowel habits of ambulatory patients. Anyway, more clinical experience (and perhaps controlled studies) is necessary to determine if there actually is a lower incidence of gastrointestinal side effects from clindamycin as compared to lincomycin. Until such time as that fact is confirmed, there seems to be no preference for clindamycin over the parent drug, lincomycin.

W. J. H.

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A. Total Number Copies Printed	980	980
B. Paid Circulation		
1. Sales through dealers, carriers, street vendors and counter sales	53	53
2. Mail subscriptions	681	681
C. Total Paid Circulation	734	734
D. Free distribution by mail, carrier or other means	196	198
E. Total Distribution	930	932
F. Office use, left-over, unaccounted, spoiled	50	48
G. Total	980	980

I certify that the statements made by me above are correct and complete.

ANNE E. SHANE

Letters to the Editor

To the Editor:

Since many people have come to the belief that the "population problem" is the most basic problem facing humankind today, Doctor Marjorie McKusick's editorial (August issue) on the book *Who Shall Live? Man's Control over Birth and Death* was especially appropriate for the Delaware Medical Journal.

This courageous and well-reasoned short book shows only too clearly what the generations which will be immediately succeeding us will have to face. It seems to me this book should be "required reading" (if such a thing still exists in our school curricula) for all thoughtful young Americans, and bringing it to the attention of Delaware's physicians as was done by Doctor McKusick's fine editorial is to be commended.

C. Lalor Burdick, Ph.D.

To the Editor:

One of the projects of the Woman's Auxiliary to the Medical Society of Delaware this year is to help support the S. S. Hope by providing shoes which can be used as corrective footwear for children.

Project Hope has indicated they can use footwear which meets the following description:

"We do prefer to have leather-soled shoes; however, we will accept shoes with neolite soles as well. The shoes should be new if possible, or if used, in good condition. In the past, we have found toddlers' sizes 5½ to 8, all E width, and boys' shoes sizes 1 to 4, all D width, to be most needed. Please be sure all toddlers' shoes are the type with high tops."

If you have any items as described, as well as crutches or braces, the Woman's Auxiliary would be glad to receive them. The following people will help in their collection:

New Castle County:
Mrs. Charles L. Minor
2000 Riverview Avenue
Wilmington, Delaware 19806

Kent County:
Mrs. Everett D. Bryan
600 S. State Street
Dover, Delaware 19901

Sussex County:
Mrs. Leslie Dobson
North Shore Drive
Milford, Delaware 19963

The S. S. Hope will be in Baltimore, Maryland, for refitting this winter. The Auxiliary would be pleased to supply their needs for corrective footwear before their departure in January, 1971.

Mrs. Joseph A. Elliott
President, Woman's Auxiliary
to the Medical Society of Delaware

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A PSYCHIATRIST LOOKS AT STUDENT REBELLION

(*Continued from page 271*)

authority — must be one of realizing the tremendous value inherent in the idealism of today's young and giving them credit for this. Freud stated, "The progress of civilization through the ages has only come about through the revolt of the son against the father."

Many of the reforms the rebellious young are seeking are long overdue. Their impatience and anger are partly a function of their youth and their lack of experience with the natural and unfortunately irrevocable foibles of human nature. At the same time much of what they ask of us can be brought into being. As always, youth serves an important function when it startles us out of complacency and stirs us to view the world from their new perspective out of which we may be directed to act towards a healthy change.

Highlights

STUDIES OF NEWER DRUGS USED TO TREAT MALIGNANCY

Arthur Weiss, M.D. — *Assistant Professor of Medicine; Director, Division of Oncology, Jefferson Medical College.*

A concept of the mathematics of cell multiplication is essential to the understanding of the limitations of cancer therapy. Therefore a drug which causes the death of 90-95% of all tumor cells will in one treatment pass reduce a tumor of one pound to approximately 100 grams. However, in four treatment passes the tumor will still represent 10^9 cells or 100 mg of tumor tissue, a volume of cancer which if disseminated throughout the organism is clinically undetectable. Ten more therapeutic courses would be theoretically necessary to decrease the tumor mass to a single cell.

Following an examination of the above mathematical models some important principles in therapy can be derived. The fewer the number of malignant cells present when treament is begun, the more effective treatment will be. Continued therapy over a long period of time is necessary. The apparent destruction of tumor is not a satisfactory end point of therapy since even then a large residual of tumor is probably still present though clinically lost sight of.

Previous concepts which did not pay attention to these mathematical principles allowed discontinuation of therapy with clinical regression. But it is now realized that prolonged periods of therapy over several years are necessary if total tumor annihilation is a clinical aim.

A knowledge of tumor biology also enables intelligent regulation of therapy in such a way as to increase the odds of success. For example, a drug which is "totally lethal" may still be used to kill tumor cells if tumor biology is considered. The normal cell cycle is one of mitosis passing on to a "G_1 period," which is the period before DNA manufacture, passing on to the "S period," which is a period of DNA synthesis, and then passing further onward to mitosis. There are agents which will affect growth within one point of the cell cycle, but will have no effect within another. For example, cytosine ardbanoside is lethal only to cells in the S stage of cellular growth. Velban (Lilly) and Colchicine (Lilly) cause death in the mitotic phase only. This datum is of importance when one considers that the normal cycle for a cell replication in cells of the mucosa of the colon is four to five days, but cells of carcinoma of the colon have an intermitotic interval of 100 to 200 days. Similar lengthening of the intermitotic interval with malignancy is present in cancers of the breast and lungs. If we could synchronize cells within the organisms so all were in the mitotic phase at once, then it would be possible to treat with a totally toxic agent, since the malignant cells have a longer cell cycle than the normal and could be by this manipulation the only cells found in the phase suitable for the drug's attack.

Suggesting that this is an important concept is the knowledge that normal leukocytes have an intermitotic interval of five days, but in acute leukemia the interval varies from seven to 50 days, and may be up to 120 days in chronic lymphatic leukemia. It is probable that a major area of future development of chemotherapy will be towards making the present agents more effective and safer, taking advantage of this difference of intermitotic interval. In clinical practice determination of the intermitotic interval can be made by tritium labeling of particular tumors or merely by such gross methods as inspecting the time it takes a lung carcinoma to double the size of its shadow on a chest x-ray.

Prescription of a sublethal dose of a drug like methotrexate which arrests cells at one stage of their division may enable the synchronization of cell population necessary in order to treat with the drugs mentioned above. Then therapy is managed according to the principles that the smaller the number of cells at the beginning of therapy, the better the results, and the longer the therapy can be maintained, the better the results.

A recent clinical study coordinated the above theoretical principles. Cancer of the colon with serosal invasion is known to have a 30% cure rate with 50% of the patients developing local recurrence within three years. In studies carried out by the University of Wisconsin and at VA hospitals, patients with colon cancer were treated with Fluorouracil (FU-Roche) for 18 months. Fifteen per cent more patients than would have been expected to be were alive at the end of three years. When the patients were treated for 18 months and then re-explored after a six-month interval, there were found a 35% lower incidence of recurrent disease and a 20% decrease in distant metastases in the treated group over the control group. These data were obviously associated with an increased survival benefit at three years.

Similar series in which a course of only eight weeks of FU was prescribed have shown no difference in survival rate at one, two, or five years.

There is evidence that similar results can be obtained with lung carcinoma, that is, a doubling or tripling of survival. But since the mean survival with lung cancer is only six months, such an increase does not achieve a great increase in useful life at the present time. It may be that maintenance Cytoxan (Mead Johnson) or combination drug therapy will be important in the treatment of lung carcinoma.

Major therapeutic problems arise from the fact that within a given tumor there is a mixed population of cells, each having different sensitivity to different agents. The tumor must then be treated with several unrelated drugs. For example, a tumor which is resistant to nitrogen mustard can be assumed to have a parallel resistance to Cytoxan, which is chemically similar. Currently drug research is designed towards closing the gaps in the present armamentarium.

Biochemical understanding thus enables intelligent clinical use of drugs. Most of the present promising agents have limited use because of their particular tumor specificity and particular toxicities. An example of this is the triazeno derivative of imidazole carboxamide, which despite its severe propensities for inducing nausea seems to be capable of achieving good regression in melanoma. It may also increase survival in lung carcinoma without any clear-cut tumor regression. Asparaginase is a dangerous drug to handle, and it seems unlikely, despite its early publicity, that it will be very effective. It is probably going to have little clinical use except in rare cases of acute leukemia or melanoma, since the remissions it produces are very short and it is very toxic. Because it also is a glutaminase antagonist, patients who are treated with asparaginase acquire severe nutritional deficiencies.

Cytosine ardbanoside is an agent which seems to have usefulness in breast carcinoma which is resistant to FU or alkylating agents. Matulane is apparently useful in Hodgkin's disease which has become resistant to all other agents, and Velban may be good in combintion with other agents in Hodgkin's disease.

The decline in the number of new drugs on the present therapeutic horizon is in part due to the decrease in developmental funds at institutions such as NIH. However, much remains to be done in the assessment of the proper use of presently available agents.

WHAT'S IN A NAME? OR THOUGHTS TO SNEEZE BY

The Edsel is thought to have failed in part because of its uninspiring name — no fuel for the Walter Mitty fire that burns in each car-owner's breast, etc. The American grizzly bear's real name is *Ursus horribilus,* which to us sounds just perfect. But who was the botanical joker who named that nefarious of weeds, the common ragweed? *Ambrosia artemesifolia,* indeed! Something to think about while you're sneezing.

Delaware Academy of General Practice

HIGHLIGHTS OF MEMBER PROFILE SURVEY

The Committee on Public Relations, AAGP, has completed a survey designed to uncover as much information about Academy members as possible. This information has to do not only with medical practice but also with data of a personal nature such as hobbies, engagement in political activities, etc. The following highlights pinpoint the important information turned up by survey of every twelfth member of the Academy.

The bulk of the new family doctors are in solo practice, although partnership practice is becoming increasingly popular.

The survey bears out the long held contention that the family doctor's work week (all doctors in private practice, for that matter) is 60 hours. Age of physician in relation to hours worked is not a factor.

Wednesday is the most popular day for the family physician to be out of office. Saturday is favored only slightly over Thursday and Saturday afternoons as being the most popular day off.

Only 5% of the family physicians returning the survey do not have hospital facilities within 15 miles of their office. Even if practicing in a large city which has several hospitals, the physician may have further to go to a hospital than the physician who has hospital facilities in a nearby town.

Nearly 60% of the family doctors see 20 to 40 patients daily in their office, with nearly 80% seeing 20 to 50 patients daily. Nearly 80% of the family doctors have fewer than ten patients in the hospital on a given day. Sixty-four per cent of the family physicians see the patients daily in the home, with one out of six of those doctors seeing from three to ten patients.

While the basic percentage survey shows that the largest portion of family physicians decided on a medical career as a family doctor before entering high school, the trend revealed by the "years-in-practice percentage breakdown" is that the family doctor, more and more, is being motivated to be a physician after entering college — with an increasing number making the decision to specialize in family medicine *before* entering medical school.

The responses to the question of why the physician went into family practice are as varied as the individual doctors themselves. While the answers ran from "It was the only kind of doctor I knew" to "I liked the idea of treating the patient — not a system," the answers invariably revolved around the versatility, continuity and overall relationship of the doctor to his patients, individually and collectively as family units. In instances where family practice evolved from being financially unable to specialize because of family responsibilities, it was not infrequent that the doctor added a note, ". . . now I wouldn't have changed it if I could."

Specific questions regarding the survey can be sent to Herb L. Huffington, M.D., Chairman, Committee on Public Relations, American Academy of General Practice, Volker Boulevard at Brookside, Kansas City, Missouri, 64112.

MORE ABOUT THAT FILTHY WEED

(Ancient History Department)

> Tobacco drieth the brain, dimmeth the sight, vitiateth the smell, hurteth the stomach, destroyeth the concoction, disturbeth the humors and spirits, corrupteth the breath, induceth a trembling of the limbs, exsiccateth the windpipe, lungs, and liver, annoyeth the milt, scorcheth the heart, and causeth the blood to be maladjusted.
>
> Tobias Venner, 1577-1660. *Via recta ad vitam longam.*

Deaths

DR. ROBERT L. DEWEES

Dr. Robert L. Dewees died unexpectedly on August 3, 1970. Dr. Dewees was a senior physician of the Wilmington Medical Center who had been in the practice of internal medicine for 20 years here.

Dr. Dewees was a native of Philadelphia. He was graduated from Haverford College and received his medical degree from Harvard Medical School. Postgraduate work was done at Pennsylvania Hospital, Philadelphia.

He was a fellow of the American College of Physicians, a board member and former president of the Delaware Heart Association, and a member of the board of directors of the Children's Bureau of Delaware. He was also a member of the Wilmington Racquet Club, and was a well known local tennis and squash enthusiast. His final illness occurred while playing tennis.

Dr. Dewees is survived by his wife, Mary Beatty Dewees, two sons, Robert L. Jr., and Edward D., and two daughters, Edith H. and Karen B., all at home. Dr. Dewees was 51 at death.

DR. RICHARD W. TOBIN

Dr. Richard W. Tobin, age 43, died on August 2, 1970. He was in the practice of general surgery at Seaford, where he had opened private practice in 1959.

Dr. Tobin was a native of East Orange, New Jersey. He graduated from Dartmouth College and Dartmouth Medical School, and the College of Physicans & Surgeons at Columbia University. Postgraduate work was done at Dartmouth Medical School. He had also been chief resident at the Veterans Administration Hospital in Little Rock, Arkansas.

Dr. Tobin was a member of the Medical Society of Delaware and the Sussex County Medical Society; he had served as chief of the medical staff at Nanticoke Memorial Hospital. He was a veteran of World War II, a member of the Seaford Lions Club and the Ocean City Marlin Club. He served on the Hospital Advisory Council by gubernatorial appointment. Death, from a heart attack, occurred on board his cabin cruiser in the Atlantic off Ocean City, Maryland.

Dr. Tobin is survived by his wife, Dr. Judith Tobin, Assistant State Medical Examiner; three sons, Richard Jr., Stanley and John; and three daughters, Pamela, Patricia and Cynthia, all at home.

DR. RAYMOND A. LYNCH

Dr. Raymond A. Lynch died at age 79, after a long illness on July 17, 1970. A native of West Virginia, he came to Wilmington in 1925. He graduated from Temple University Medical School and then was resident surgeon at Temple, the Jewish Hospital in Philadelphia, and the Gundry Hospital in Baltimore. He later took special postgraduate work at the University of Pennsylvania. Dr. Lynch was a diplomate of the American Board of Surgery and the International College of Surgeons.

His career was marked by diverse and multiple activities. He was a staff member of all the Wilmington hospitals and had been Chief of Surgery at the St. Francis and the Wilmington General Hospitals, surgeon for several railroads, chairman of the executive committee of the Emily Bissell Hospital, a chief surgeon at the duPont Co., Deepwater plant hospital, and consultant to several hospitals in neighboring states.

Dr. Lynch joined the Enlisted Medical Reserve Corps in World War I; in World War II he was a colonel in the Delaware National Guard and was a brigadier general at the time of his death. He had also been chief surgeon for the Delaware State and New Castle County Police, and a deputy sheriff. He had served several terms on the State Board of Health and had been President of the Board since 1966. He had been awarded several medals for service by the State of Delaware.

Dr. Lynch is survived by his wife, Elizabeth H. Lynch, of Alapocas; two sons, Raymond A. Lynch, Jr., of Fairfax, and Richard Lynch, at home; a sister; and three grandchildren.

In Brief

Speakers on "Ask the Doctor"

Speakers for November, 1970, on the Tuesday radio program (11:05 a.m. WDEL) produced by the Medical Society of Delaware are: November 3, Dene T. Walters, M.D., *The Doctor Shortage;* November 10, Norman Cannon, M.D., *Wilmington Medical Center, Today and Tomorrow;* November 17, Marvin Dorph, M.D., *Diabetes;* November 24, Anthony L. Cucuzzella, M.D., *Physical Rehabilitation.*

Diphtheria Immunization

The current outbreak of diphtheria in certain areas of the country should serve as a reminder not to become complacent about the necessity of continued and complete immunization against this disease. Delaware fortunately has experienced no cases of diphtheria since 1962 and only three since 1950. The State's last death was in 1949.

The State's Division of Physical Health suggests that infants and younger children (under six years) be immunized according to the American Academy of Pediatrics' recommendations. Booster doses of tetanus-diphtheria (Td) toxoid should be given every five to ten years to older children and adults. In the face of this recent outbreak the five year booster interval is suggested.

In the News

Gov. Russell W. Peterson has announced the appointment of 17 persons to the Delaware Comprehensive Health Planning Council for state-wide health-care services.

Appointed to three-year terms are Mrs. Mary Lou Anderson, a Wilmington pharmacist; Mrs. Arva Jackson, Wilmington, the governor's special assistant for human affairs; Richard Griffith, Wilmington, executive director, Association of Delaware Hospitals; State Rep. Clarice U. Heckert, Highland Woods; Harold V. Maybee, Wilmington, retired director of Blue Cross and Blue Shield of Delaware; James Beebe, M.D., Lewes; and Herbert Baganz, M.D., Wilmington.

Appointed to one-year terms are Halsey Knapp, a Nassau farmer; Robert W. Frelick, M.D., Deerhurst; and William H. Anderson, Wilmington, unit director at Kingswood Community Center.

Serving two-year terms are Walton Simpson, Camden, Kent County building supply dealer and contractor; Harold Rafal, M.D., Wilmington; Mrs. Lawrence Taylor, Dover, director, Capitol Green Community Center; Gordon S. Crispin Jr., Seaford, administrator of Nanticoke Memorial Hospital; James McClements, M.D., Dover, David Platt, M.D., Wilmington; and State Sen. Herman M. Holloway Sr., Wilmington.

Overseas Study Competition

The Institute of International Education has opened its annual competition for grants for graduate study or research abroad. The grants, available for the academic year 1971-72, are designed to promote mutual understanding between the people of the U.S. and other countries.

Applicants in the field of medicine must have an M.D. at the time of application. Preference is given to applicants between the ages of 20 and 35 and to candidates who have not had prior opportunity for extended study or residence abroad, with the exception of those who have served in the armed forces.

Two types of grants will be available through IIE under the Fulbright-Hays Act: U.S. Government Full Grants and U.S. Government Travel Grants.

A "Full" award will provide a grantee with tuition, maintenance for one academic year in one country, round-trip transportation, health and accident insurance and an incidental allowance.

Countries which are expected to participate in the Full Grant program are: Argentina, Australia, Austria, Belgium-Luxembourg, Brazil, Ceylon, Chile, China (Republic of), Colombia, Denmark, Ecuador, Finland, Germany (Federal Republic of), Greece, India, Iran, Ireland, Italy, Japan, Korea, Liberia, Malaysia, the Netherlands, New Zealand, Peru, Portugal, Sweden, Thailand, Turkey, the United Kingdom, Uruguay. For holders of grants to Australia, Ceylon, China (Republic of), Finland, Germany, India, Iran, Japan, Korea, Liberia, Poland, Portugal, Romania, and Turkey a maintenance allowance will be provided for one or more accompanying dependents.

Candidates in this region should request information and application forms from the nearest IIE headquarters in New York City or Washington, D.C.

Certifying Exam

The American Board of Family Practice will give its second examination for certification in various centers throughout the United States. The examination will be over a two-day period on February 27-28, 1971. Deadline for receiving completed applications in the Board office is November 1, 1970. For further information write: Nicholas J. Pisacano, M.D., Secretary-Treasurer, American Board of Family Practice, Inc., University of Kentucky Medical Center, Annex No. 2, Room 229, Lexington, Kentucky, 40506.

CLINICAL NOTICES AND MEETINGS

N. J. Internists Meeting

Specialists in internal medicine and related specialties will hold a scientific meeting in Trenton, N. J., November 11 under the sponsorship of the American College of Physicians. Write to: James F. Gleason, M.D., Medical Director, Atlantic City Hospital, Atlantic City, N.J.

Award Competition

The Albion O. Bernstein, M.D. Award of $1,500 was established by Mr. Morris J. Bernstein of New York in memory of his physician son who died on November 23, 1940 while on an emergency hospital call. The 1971 Award is to be given to the physician, surgeon or scientist who shall have made the most widely beneficial scientific discovery in medicine, surgery or the prevention of disease during the period November 23, 1969 to November 23, 1970. Nominations should be sent to the Awards Committee, Medical Society of the State of New York, 750 Third Avenue, New York, N. Y., 10017, no later than December 1, 1970. The chairman of the committee is Alfred A. Angrist, M.D., Professor of Pathology, Albert Einstein School of Medicine, Yeshiva University.

Internists' College

The American College of Physicians has announced a series of 25 formal postgraduate courses, to be held in cooperation with medical schools, hospitals and other institutions and 36 state and area scientific meetings for the 1970-71 academic year. Edward C. Rosenow, Jr., M.D., Executive Director of the College, says the courses and meetings are held to help specialists in internal medicine and related specialty fields keep current on new developments in basic and clinical research that affect their practices. Your state area meeting is as follows:

Four-State Area Meeting: (D of C, Delaware, Maryland, Virginia) Williamsburg, Va., Nov. 20-22. For information write: Julian R. Beckwith, Sr., M.D., University of Virginia Hospital, University Station, Charlottesville, Va.

Interstate Assembly The Interstate Postgraduate Medical Association will hold its 55th Annual Scientific Assembly, November 2-5, 1970, at the Palmer House, Chicago. For information write: Interstate Postgraduate Medical Association, 307 N. Charter Street, Madison, Wisconsin, 53715.

PG Courses The Department of Otolaryngology of the University of Illinois will conduct a postgraduate course in Laryngology and Bronchoesophagology, November 9-20, 1970. This course is limited to 15 physicians and will be held at the Eye and Ear Infirmary of the University of Illinois Hospital, Chicago and will include visits to a number of other Chicago hospitals. Write for details to the Department of Otolaryngology, Abraham Lincoln School of Medicine, College of Medicine, University of Illinois at the Medical Center, P.O. Box 6998, Chicago, Ill., 60680.

The University of Miami School of Medicine, Department of Otolaryngology, is presenting *Otolaryngology for the Family Practitioner*, November 13-14, 1970, at the Sheraton Four Ambassadors Hotel in Miami, Florida. Accredited by the AAGP. For information write: Fredric W. Pullin, II, M.D., Neuro-Otologic Laboratory, University of Miami, School of Medicine, P.O. Box 875, Biscayne Annex, Miami, Florida, 33152.

OB & GYN Course The University of Florida College of Medicine will present *Seminar in Obstetrics and Gynecology,* November 19-20, 1970. Contact: Division of Postgraduate Education, J. Hillis Miller Health Center, Box 758, College of Medicine, Gainesville, Florida, 32601.

Two PG Courses Two Postgraduate Courses of one week each in Internal Medicine and Obstetrics and Gynecology have been announcd by the Chicago Medical Society. The course on Internal Medicine will run from November 9-13, and Obstetrics and Gynecology from November 16-20. Both courses will be conducted at the Knickerbocker Hotel in Chicago.

For details write: Chicago Medical Society, 310 South Michigan, Chicago, Illinois, 60604.

November Heart Sessions Forms to register for the 43rd Annual Scientific Sessions of the American Heart Association may now be obtained through the Delaware Heart Association, Suite 60, Independence Mall, Wilmington. The meeting is being held from November 12-15 in Convention Hall, Atlantic City, N.J.

Hospital Conference A conference on *Today's Hospital Problems: An Interdisciplinary Approach,* a leadership course for Chiefs of Staff, Hospital Administrators and Governing Personnel will be presented by the Mound Park Hospital Foundation and the University of Florida, November 11-14, 1970, at the Tides Hotel and Bath Club, Redington Beach, Florida. Address: Postgraduate Medical Education, Mound Park Hospital Foundation, Inc., St. Petersburg, Florida, 33701.

CLASSIFIED AD SECTION

Advertisements under the Classified Ad Section are charged at the rate of 30 words or less, set solid. One insertion $4.00. Call the Journal office, 658-7596 for placement. All advertisements are payable in advance. The Editorial Board reserves the right to edit copy. Closing date for new copy is the first of the month for inclusion in the current issue.

Classified advertisements of a professional nature are free to members.

INTERNIST: Has successfully completed first part I.M. Boards. Interested in partnership or small I.M. group. 1963 Jefferson Medical College graduate. Lankenau Hospital internship. Internal Medicine residency and Hypertensive and Renal Disease Fellowship at Cleveland Clinic. Service obligation completed. Currently Dept. of Nephrology and Hypertension, Straub Clinic, Honolulu. Available within next six months.

FOR RENT: Medical offices in the new professional building: 414 Kirkwood Highway, Newark, Delaware. Ample parking facilities, 1100 sq. ft., will build partitions and design to tenant's need. Call: 738-5766.

OFFICE SPACE AVAILABLE: A 400 sq. ft. office includes air conditioning, janitor service and parking. No city taxes required. For further information call 652-5220.

The Physician and The Pharmacist

A monthly feature of the Delaware Pharmaceutical Society

VITAMIN K — Caution

Menadione (vitamin K) and its water soluble salts ('Hykinone'; 'Synkavite') are effective in the prevention of hypoprothrombinemia resulting from a simple lack of vitamin K but relatively ineffective in reversing the coagulation defect induced by coumarin anticoagulants.

In contrast, phytonadione (vitamin K; 'Mephyton'; 'Aquamephyton'; 'Konakion') is highly effective in opposing the action of coumarins. Phytonadione is clearly the drug of choice in emergency situations involving coumarin-treated patients who are bleeding spontaneously or from trauma or who are being prepared for surgery.

Emergency room supervisors in many hospitals are seemingly unaware of the superiority of phytonadione preparations in the control of drug-induced hypoprothrombinemia. Only 50 of 100 Los Angeles-area hospital emergency rooms surveyed by the authors stocked phytonadione preparations. One or more menadione derivatives were stocked in 87 hospitals, while 8 emergency rooms reported no vitamin K preparations in the drug room. Two or more preparations were available in 45 hospitals. The author strongly urges that menadione and its derivatives be removed and replaced by phytonadione in all hospitals and clinic emergency rooms.

Udall JA: Calif Med *112:65, 1970.*

SULFISOXAZOLE — SULFAMETHOXAZOLE

Toxic Hepatitis and Stevens-Johnson Syndrome

A 21-year-old woman with a history of urticaria following penicillin therapy was given sulfisoxazole in a dosage of 4 g daily for a urinary tract infection. Four days later the patient was instructed to discontinue the drug and to take sulfamethoxazole, 2 g daily for four weeks. Two days after completing the prescribed course of treatment the patient noted the onset of anorexia, nausea and vomiting. An acute illness followed with development of symptoms of toxic hepatitis and the Stevens-Johnson syndrome. The patient responded to corticosteroid therapy and was discharged from hospital 20 days after onset of the acute illness. This is apparently the first reported case in which two major complications of sulfonamide therapy occurred simultaneously in the same patient.

Shaw DJ and Jacobs RP: Johns Hopkins Med J 126:130, 1970.

INHALATION THERAPY MEDICATIONS

Bacterial Contaminations

From May 1968 through February 1969 an extensive outbreak of *S. marcescens* infection occurred at the Parkland Memorial Hospital, Dallas, Texas, where 15,000 to 20,000 intermittent positive-pressure breathing treatments per month are administered. The source of infection was found to be large, *opened* bottles of inhalation therapy medications. It was customary at the time to refrigerate unused portions of medications for use the next day. Investigation disclosed that cross-contamination from the used bottles to previously unopened bottles occurred on wards throughout the day. This cross-contamination resulted from faulty technique by the therapists. The epidemic occurred despite a program of daily decontamination of reservoir nebulizers with 0.25 per cent acetic acid. The epidemic was slowly brought under control by discarding all opened inhalation therapy medication bottles and returning to use of small containers (60-ml bottles of Alevaire and 30-ml bottles of saline solution and distilled water). Opened bottles are now discarded at the end of each eight-hour working shift. These control measures resulted in an overall decline in positive clinical cultures, but Serratia isolates from both sputum and urine have continued at a level clearly above that observed before the epidemic. Surveillance programs of inhalation practices must include not only monitoring of the effluent from reservoir nebulizers, which remains the greatest potential hazard, but also regular monitoring of medications dispensed in multiple dosage containers and medication nebulizers during nebulization.

Sanders CV Jr, et al: Ann Intern Med 73:15, 1970.

THE FORUM

Environment And Health

POLLUTION AND ALLERGIC DISEASE

Harry A. Sultz, D.D.S.
Joseph G. Feldman, M.S.
Edward R. Schlesinger, M.D.
William E. Mosher, M.D.

The immediate health consequences of acute episodes of air pollution are well documented. There is a need for documentation of the long-term effect of continued exposure to moderate levels of air pollution.

In 1967, Winkelstein et al, found that there was a relationship between air pollution and both total mortality and selected respiratory system mortality among white men aged 50 to 69.[1] Subsequently, the Winkelstein group reported a relationship between air pollution and mortality from gastric and prostate cancer.[2,3]

The availability of both air pollution data and incidence and prevalence data from the Erie County (New York) Study of Long-Term Childhood Diseases, conducted in the same geographic area, provided a unique opportunity to investigate the possibility that Winkelstein's hypotheses concerning air pollution and mortality might apply as well to air pollution and morbidity attributed to asthma and eczema among children.[4] A hospital record survey — among the 22 hospitals in or near Erie County — sought to identify the children of Erie County under age 15 who were hospitalized with asthma or eczema during that period.

The hospitalized asthma and eczema cases were distributed by census tract of residence at the time of diagnosis, and grouped according to the level of air pollution as measured by suspended particulates for each area.

The incidence rates of hospitalized cases with each condition produced a definite gradient by air pollution level. An average annual incidence rate of 32.4 hospitalized asthma cases per 100,000 population at risk was found at the lowest air pollution level in comparison to a rate of 50.7 at the highest air pollution level.

The standard morbidity ratios for hospitalized eczema patients increased consistently from 53% at the lowest air pollution level to 130% at the highest level.

A striking association between air pollution level and the incidence of asthma and eczema was revealed among boys under five years of age. An even sharper gradient was evident among male hospitalized eczema patients under five years of age.

It is not surprising that the findings for asthma and eczema were parallel, since both are primarily allergic phenomena. In fact, both these conditions often develop in the same child. About 50% of the infant eczema cases have some form of respiratory allergy in later life.[5] The finding that the incidence of asthma and eczema is similar for the younger age group supports the contention of Glaser and Arbeiter that most allergies have become established by the sixth year of life.[6,7]

These figures do not take into account the effect of air pollution on the vast majority of asthma and eczema patients who never require hospitalization. Chronic allergic disorders are by far the most common long-term conditions in childhood. If air pollution affects the incidence of the more severe cases among children, as is strongly suggested by the Erie County Survey data, there are important and widespread implications in terms of medical costs, physician and hospital utilization, and personal suffering.

Dr. Sultz is Associate Professor and Mr. Feldman is Clinical Instructor, Department of Social and Preventive Medicine, School of Medicine, State University of New York; Dr. Schlesinger is Professor and Head of the Maternal and Child Health Program, Graduate School of Public Health, University of Pittsburgh; and Dr. Mosher is Commissioner of Health, Erie County, New York.

Abstracted from the American Journal of Public Health, May, 1970.

This paper was presented before the Epidemiology Section of the American Public Health Association at the Ninety-Seventh Annual Meeting in Philadelphia, November 11, 1969.

References will be supplied by the Journal on request.

This page is sponsored by the Delaware Tuberculosis and Health Society.

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Eckerd's

PRESCRIPTION DRUG STORES

Delaware
Medical Journal

NOVEMBER, 1970
VOLUME 42
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SEVENTH ANNUAL INFECTIOUS DISEASE SYMPOSIUM

INTRODUCTORY REMARKS

The annual Infectious Disease Symposium sponsored by the Delaware Academy of Medicine, the Wilmington Medical Center and the Delaware Tuberculosis and Health Society has become one of the best known meetings of this type throughout the United States. The symposium began in 1964 at the Delaware Hospital. The original idea for the symposium was proposed by Mr. E. G. Scott who at that time was Director of Microbiology at the Delaware Hospital. The rapidly developing Infectious Disease Research Program at the Delaware Hospital prompted these symposia in which leading scientists in the field of infectious diseases were brought to Wilmington to present formal lectures and participate in round table discussions. The first program in 1964 lasted for one-half day with a faculty consisting of three guest speakers, two from Baltimore and one from Philadelphia. Over the years, the program has grown so that in 1970, the symposium lasted three days with fifteen guest faculty members, three of whom came from outside the United States, from England, Australia and Hungary.

For the past two years, the Delaware Tuberculosis and Health Society has been one of the sponsors of the symposium and under the aegis of this organization, the symposium was encouraged to hold a downstate session of the program. This abbreviated program has been held at the Rehoboth Beach Country Club for the past two years on the evening preceding the symposium in Wilmington and has been an unqualified success.

The plans for the 1971 symposium have been completed, and again an excellent faculty with experts from the United States and abroad have agreed to come to Wilmington for three days of lecture, round table and informal discussion.

This year for the first time, we are publishing a representative number of papers presented at the Infectious Disease Symposium. We hope to make this an annual affair so that in the fall of each year, there will be an Infectious Disease Symposium issue of the Delaware Medical Journal.

WILLIAM J. HOLLOWAY, M.D.

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*The first Christmas Seal, 1907 Type I.

7th ANNUAL INFECTIOUS DISEASE SYMPOSIUM

FACULTY

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ADVERSE EFFECTS OF ANTIBACTERIAL AGENTS

• Proper antibiotic usage requires familiarity with the pharmacology and toxicology of these agents. Antibiotic induced diseases are becoming more prevalent and should be recognized by the practicing physician.

William Brumfitt, M.D., Ph.D.,
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In Britain antibiotics are the most widely used drugs obtained on a doctor's prescription. It is a tribute to the safety of these drugs that they are used so widely with minimum toxic effects. It is also true to say that many of the toxic reactions which have been reported with the commonly used antibiotics have resulted from their unnecessary use or gross error in dosage. Overdosage may be absolute, but sometimes the overdosage is relative. For example, a defect in excretion due to impaired renal function can cause accumulation to a toxic level even when the drug is given in a dose well below that which is normally recommended. Some of the complications which have been described are rare but have been highlighted because they provide a means of investigating other medical disciplines. For instance, penicillin-induced hemolytic anemia, or hemolytic anemia that follows the use of certain antimicrobials when there is a glucose 6-phosphate dehydrogenase deficiency, may be of special interest to hematologists, and hence this subject has been widely reported in the medical literature. Some of these special conditions will be dealt with in more detail later.

The complications related to antimicrobial therapy can be divided into pharmacological and biological, and Table I gives examples of the pharmacological complications. Absolute overdosage usually results from an error in prescribing, but occasionally deliberate overdosage is necessary to eradicate infection as a lifesaving measure. Relative overdosage occurs most often in association with renal failure. In the presence of impaired renal function certain drugs, such as the aminoglycosides, nitrofurans and amphotericin B, are particularly dangerous and frequently produce serious toxicity. Similarly, certain drugs are dangerous in hepatic failure, where there are enzyme defects, immaturity of the detoxicating mechanisms or, in certain circumstances, drug interactions.

An example of relative overdosage due to an enzyme deficiency is illustrated in Figure 1. The simplified diagram attempts to show the mechanism of hemolytic anemia due to glucose 6-phosphate dehydrogenase deficiency. Sulfonamides, nitrofurans and nalidixic acid are only some examples of antimicrobial agents which can precipitate a hemolytic anemia in patients with this enzyme deficiency. The figure shows how sulfonamide normally combines with hemoglobin to produce the oxidized compound methemoglobin. However, this reaction is normally reversed by methemoglobin reductase which depends on the pentose shunt producing TPNH. The TPNH production is, in turn, dependent upon glucose 6-phosphate being converted to 6-phosphogluconate for which the enzyme glucose 6-phosphate dehydrogenase (G-6-PD) is required. If methemoglobin is not reduced back

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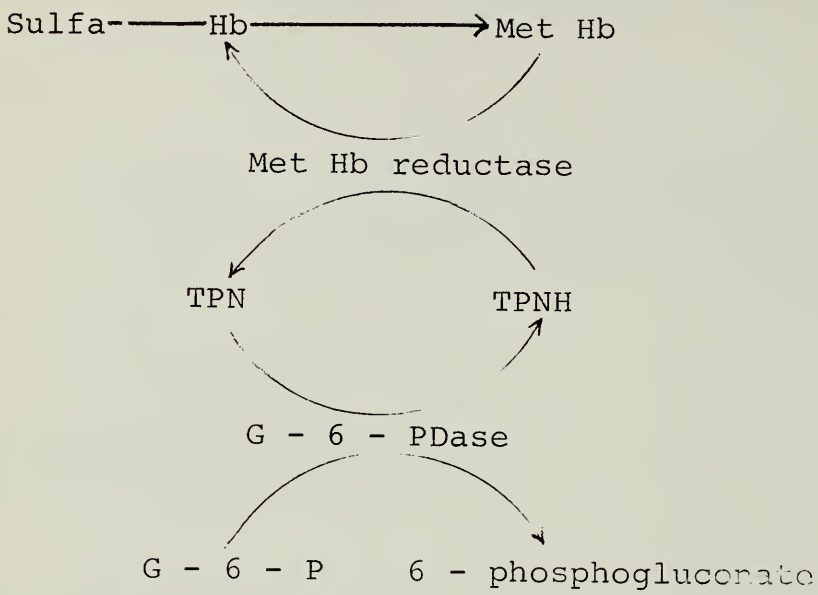


FIGURE 1

Diagram to illustrate the way in which sulfonamide may cause hemolytic anemia in patients with glucose - 6 - phosphate dehydrogenase deficiency.

to oxyhemoglobin, then the denatured hemoglobin results in the characteristic Heinz body anemia, which is associated with intravascular hemolysis and hemoglobinuria.

From the medical literature it might be supposed that this condition is common in those races where deficiency of G-6-PD is often found. However, not all workers agree that hemolytic anemia following the administration of these drugs is common, even in populations where the enzyme deficiency has been shown to be severe. Furthermore, where a deficiency is present in the Negro, and hemolytic anemia occurs, it is less severe because only mature red cells are deficient in the enzyme, whereas newly formed red cells and reticulocytes contain the enzyme in normal amounts. Thus, only the *mature* red cells are destroyed, and severe anemia does not result.

In Asiatics, however, all red cells may be deficient, and the resulting hemolytic anemia can, therefore, be of great severity. Nevertheless, it is interesting that in some countries where this deficiency is common and sulfonamides are withheld for the treatment of infection, diabetic patients are treated with the sulfonylurea group of oral antidiabetics, apparently with little trouble.

The biological complications (Table II) are no less important. For example, following administration of chemotherapeutic substances by mouth, change in bowel flora or direct action of these substances on the bowel wall can give rise to complications varying in severity from pseudo-membranous enterocolitis to the less serious, but nevertheless highly inconvenient, complication of diarrhea. Other well known biological effects include suppression of antibody synthesis, liberation of toxic components from microorganisms, specifically seen in the Jarisch-Herxheimer reaction, and, perhaps more remotely, the masking of infections by an agent which is only partially active. Some of these adverse reactions of chemotherapeutic agents will be dealt with later in detail. Before going on to these, however, it is worth emphasizing that a very important complication of chemotherapy is the use of an ineffective drug. This may be due to incorrect prescribing, but other causes, such as failure to appreciate the instability of some antibiotics when made in solution, are important. This especially causes problems when an unstable antibiotic is added to an intravenous infusion fluid. Difficulties also arise when compounds require special conditions for their action; for instance, hexamine

TABLE I

ANTIBIOTIC THERAPY
Pharmacological
Complications
(Dose Related and Specific)

Overdosage	
Accidental	
Deliberate (lifesaving)	
Relative overdosage	
Renal failure	Aminoglycosides, Nitrofurans
Hepatic failure	Tetracyclines
Enzyme defects	Nitrofurans, Sulfonamides
Immaturity	Chloramphenicol in neonates
Drug interactions	
	Aminoglycosides and muscle relaxants

mandelate is only active in the urine when the pH is lowered to 5 or below. It is insufficiently appreciated that irregular absorption from the alimentary canal occurs with many commonly used antibiotics. For example, failure to give instructions about taking antibiotics in relation to food can, in some cases, lead to poor absorption, while in sick people absorption of antibiotics is known to be irregular.

Finally, an incorrect bacteriological diagnosis or failure of a clinician to appreciate a bacteriologist's report in relation to the specific infection with which he is dealing, can result in errors of treatment. I have seen nitrofurantoin used for the treatment of a pulmonary staphylococcal infection on the basis of a laboratory report, although it is well known that this substance does not produce an effective concentration of antibacterial substance at any site other than the urinary tract.

The Sulfonamides

In Table III some of the unwanted effects of sulfonamides are listed. These vary from nausea to polyarteritis nodosa. The latter condition rarely follows the use of sulfonamides, and the causal role of these compounds is not established definitely.

Jaundice has been reported following sulfonamide administration and can be of two varieties. In infants whose mothers have received sulfonamides late in pregnancy, it is theoretically possible that the sulfonamide crossing the placenta will compete with bilirubin for conjugation with glucuronic acid.[1,2] However, this complication of sulfonamides is apparently a theoretical one, for Adamsons and Joelsson[3] claim that it is unlikely that enough sulfonamide can cross the placenta to conjugate with sufficient binding sites to cause serious hyperbilirubinemia. It is therefore improbable that jaundice will result from this cause, and the evidence that such therapy has ever been the cause of kernicterus is unproven. Nevertheless, it would probably be advisable to avoid sulfonamide in the later stages of pregnancy if there is rhesus incompatibility, or in neonates where delivery has been premature.

Sulfonamides have also been reported to cause hepatocellular jaundice. A raised transaminase with eosinophilia is characteristic of the condition, and liver biopsy shows multiple focal areas of cell necrosis, prominent bile casts and other evidence of intrahepatic cholistasis. It is postulated that the mechanism is acquired hypersensitivity.[4] The actual number of patients reported during the last 30 years, which includes a period of about ten years when sulfonamides were the only antibacterial agents available, is 108. The jaundice resolves when the sulfonamide is withdrawn, no deaths have been recorded, and there is no doubt that the danger of sulfonamide in causing such an hepatic lesion is substantially less than with some other widely used drugs, such as chlorpromazine.

Hemopoietic disturbances have also been reported, and in particular depression of marrow function. However, in contrast to that

TABLE II
ANTIBIOTIC THERAPY
Biological Complications

- Change in bacterial flora
  - Pseudomembranous enterocolitis
  - Suppression of Vitamin K synthesis
- Suppression of antibody synthesis
  - Typhus and typhoid
- Liberation of toxic components from microorganisms
  - Jarisch-Herxheimer reaction
- Masking of infections by a partially active agent
  - S.B.E. Inadequate or bacteriostatic dose

caused by chloramphenicol, recovery usually occurs when the sulfonamide is withdrawn.

Renal crystalluria was at one time an important problem following administration of sulfonamides, but, with the more recently developed derivatives, this complication is rare, provided that precautions to maintain an adequate urine flow are taken.

Finally, and perhaps most important, is the question of skin rash and in particular the Stevens-Johnson syndrome. (Table III) Of course, the report of Stevens and Johnson was made in 1922, long before sulfonamides were available, but later sulfonamides were incriminated and the long-acting derivatives have been said to be particularly dangerous[5] although, since the original report, Beveridge[6] has seen no further cases. The Federal Drug Administration reported 116 cases and 20 deaths, but this must be viewed in a proper perspective for the frequency seems to be one to two cases per million daily doses, and the Norwegian worker Wereide[7] has calculated that the risk of developing this syndrome is of the order of one patient per metric ton (thousand kilograms) administered.

It is salutary to note that a number of patients who have developed the Stevens-Johnson syndrome following the administration of sulfonamide have been given the drug for dubious reasons, such as prophylaxis during an attack of measles or for undiagnosed fever. This necessarily raises the question as to whether the sulfonamide was always the true or sole etiological agent or whether the underlying illness should also be implicated. It is interesting that sulfonamides have been used widely for the prophylaxis of rheumatic fever without causing this complication.

Nevertheless, the most important toxic effect of sulfonamides is in relation to a wide range of skin lesions due to hypersensitivity reactions. Table III shows that these can range from transient localized rash to the typical diffuse maculo-erythematous rash, with or without urticaria, and in the more severe forms this may become confluent. As already indicated, the more serious complications, such as the Stevens-Johnson syndrome and Lyell's syndrome, are rare. It is important to appreciate that the varieties of skin hypersensitivity shown in Table III represent a continuous spectrum of increasing severity, rather than being separate entities, although it is true that distinct and unrelated manifestations of sulfonamide hypersensitivity, such as erythema nodosum, also occur.

Two final points arise, firstly that sulfonamide toxicity varies from compound to compound (Table IV) and the statement that long acting sulfonamides are more likely to cause severe skin manifestations is not substantiated in the literature.[8] In this context it is not widely appreciated that some of the standard forms of sulfonamide (for example, sulfadiazine, half life 18 hours) have not been incriminated with the Stevens-Johnson syndrome, though they are in fact long acting. Secondly, it is worth remembering that the antidiabetic sulfonylureas are closely related chemically to the antibacterial sulfonamides, and that some of these, such as chlorpropamide (half life 36 hours) are also long acting. Table V compares the toxic effects of carbutamide, which has both an antibacterial and antidiabetic action, with tolbutamide, which has only an antidiabetic action. The latter has been described as the safest drug since coffee, without an outcry from the medical profession, although it can be seen that these sulfonylureas cause side effects similar to those found with sulfonamides used for the treatment of infection.

TABLE III

SOME IMPORTANT UNWANTED EFFECTS RESULTING FROM ADMINISTRATION OF THE SULFONAMIDES

Nausea
Polyarteritis nodosa
Jaundice —Neonatal (with kernicterus)
Hepatocellular in adults

Renal crystalluria
Hemopoietic disturbances
Dermatological —Hypersensitivity
Rash — local, diffuse, confluent maculo-erythematous (sometimes with urticaria)

Erythema multiforme
Lyell's syndrome
Stevens- Johnson syndrome

Frequency 1-2 cases/10^6 daily doses
116 cases (79 under 15 years)
20 deaths

It has been said that the long-acting sulfonamides are dangerous because the persistence of the rash will be related to the time that the drug is retained in the body. However, I have personally seen an example of a sulfonamide rash following the use of the ultra-long acting compound sulfadoxine which disappeared within half an hour in spite of sustained levels of the compound in the serum.[9]

The Penicillins

It is interesting to speculate whether penicillin would have been put on the market if animal toxicity tests had been carried out. Administration to the guinea pig results in coliform invasion of the blood stream from the gut, which is fatal in a few days. Of course, this effect is not seen in the human, where toxicity is rare. Trouble only arises when massive parenteral doses are given, so that penicillin crosses the blood brain barrier in sufficient concentration to cause damage or when an excessive dosage is given by the intrathecal route. In fact, toxicity in the human associated with large doses of penicillin is more likely to result from hyperkalemia due to the use of the potassium salt, or from hypokalemia resulting from use of the sodium salt rather than from the penicillin itself.

TABLE IV

The Toxicity of Three Different Sulfonamides in Relation to Nausea, Vomiting, Headache, Dizziness, Drug Fever and Sensitization

Sulfafurazole	1%
Sulfadiazine	6%
Sulfathiazole	18%

When using penicillin for the treatment of syphilis, it is important to remember the Herxheimer reaction, which results from release of a specific toxic substance at the site of the spirochetal invasion. In early syphilis 50% of patients given penicillin develop an influenza-like illness, with fever, whereas in late syphilis collapse and death may occur. The latter is due either to local effects, such as occlusion of the coronary arteries, when there is an associated syphilitic aortitis, or to a diffuse anaphylactoid reaction.

At the present time much attention is being focused on the problem of hypersensitivity to the penicillins because such reactions are by no means uncommon. However, reports of the actual incidence of hypersensitivity vary from author to author, and there is also considerable confusion about the etiology of this condition. Hypersensitivity may result from large molecular contaminants, either from the amidase used to remove the side chain in the semi-synthetic synthesis of the new penicillins or from the actual mold *(P. chrysogenum)* used in penicillin production. This theory goes some way to explaining why penicillin by

Table V

Toxic Effects of the Antidiabetic Sulfonylureas

	Carbutamide	Tolbutamide
No. Studied	3,936	3,582
Side effects	5.44%	2.46%
Skin allergy	3.6%	0.8%
G.I. disturbance	1.6%	1.6%
Drug fever	0.12%	0.03%
Blood dyscrasia	0.12%	0.03%

injection is more likely to produce hypersensitivity than penicillin administered by the oral route, since many of the large molecular contaminants would be either destroyed or not absorbed from the alimentary canal. Alternatively, hypersensitivity can result from degradation products of penicillin, especially the penicilloyl derivatives. These may be formed *in vitro* and are therefore related to the concentration, temperature and time of storage of the penicillin *in vitro*, but they may also be formed *in vivo*. At the present time there is controversy as to whether the large molecular contaminants or degradation products are more important in causing skin hypersensitivity. A recent report from the United States of side effects in hospitals where different brands of ampicillin were used is most interesting, for the incidence of hypersensitivity was significantly different.[10] In this investigation it was noted that the incidence was related to the suppliers of the ampicillin, suggesting, of course, that different products vary in their ability to cause reactions. These observations clearly deserve further investigation.

Finally, it should be noted that the penicillin monomer tends to undergo polymerization when in solution *(in vitro* and *in vivo)* following opening of the β-lactam ring, which then links covalently with other similar molecules. The resulting high molecular weight polymer acts as a haptene and by combination with preformed antibody can then cause hypersensitivity reactions. The actual mechanism of hypersensitivity is therefore obscure but can be divided broadly into at least three different varieties, large molecular weight contaminants, penicillenic acid or other penicilloyl derivatives and high molecular weight polymers.

The type of hypersensitivity reaction also varies. Immediate profound shock may occur and is associated with reaginic antibodies of the IgE class which bind rapidly to receptor sites, but serum sickness and rashes (usually maculopapular) are associated with IgG antibody. Previous exposure to penicillin, either by therapy or by hidden contact with products such as milk, always seems to have occurred in patients who develop hypersensitivity reactions. (The few patients who reacted to penicillin when it was first introduced in 1944 may well have been allergic to the various contaminants present in the suspending agent.) Sensitization may also have been due to contamination of syringes, although this will be unusual in the future because of the introduction of disposable products, but contamination of articles with penicillin in the hospital ward can sometimes be important in sensitization.

The diagnosis of penicillin allergy is far from easy, and it must be remembered that some of the direct tests may themselves precipitate a severe reaction. For this reason, attempts have been made to develop indirect methods. The hemagglutination test, where red cells together with an appropriate antigen are incubated with the patient's serum to see whether agglutination occurs,[11] has not proved to be useful. The basophile degranulation test,[12] in which the antigen and the patient's serum are incubated with basophiles which are then examined for degranulation, has been used by many investigators. Hypersensitivity was claimed to be present when degranulation occurred, but this test has not been found to be reliable in practice. Yet another *in vitro* test is the use of lymphocyte culture to see whether incubation with the specific antigen results in their conversion to blast-forms. In the hands of some workers the test has proved to be successful in predicting allergy[13] whereas others have expressed serious reservations about the value of the test.[14]

Another approach to the diagnosis of allergy is by cutaneous testing, using either the

Table VI

Cephaloridine Nephrotoxicity

Diagnosis	Cephaloridine dosage in gm per day >6	6 for 5 days	<6	Total Cases
S.B.E.	4	3	3	10
Septicemia		2		2
Kidney infections	2	1	5	8
Lung infections	2	1	4	7
Others	5	1	3	9
Total Cases	13	8	15	36

penicillin itself or, more usually, the penicilloyl derivatives. It is claimed that the penicilloyl polylysine derivative gives more accurate results than the parent penicillin compound and, at the same time, is much less likely to produce a severe reaction.[15] However, not all workers agree that this test is a reliable one, and some have found the test to be positive in only 60% of patients who are sensitive to penicillin. There is also at least one report[16] of this test causing cutaneous manifestations of penicillin hypersensitivity. Whenever cutaneous tests are being carried out, it is wise to have a syringe containing adrenaline available to deal with any emergency that may arise. Finally, the possibility of using passive transfer experiments with serum from hypersensitive patients is, at present, being explored, using the monkey and rabbit.

The rash following the use of penicillin is highly characteristic and may occur any time between one hour and 30 days. However, following the first administration of a penicillin, it is usually seen between the fifth and ninth day of treatment, but on the second and subsequent occasions the onset may be much more rapid. A most interesting observation is that of Pullen and his colleagues in Edinburgh,[17] who found that ampicillin given for the treatment of glandular fever (an illness, incidentally, for which there is usually no indication for chemotherapy) increases the risk of rash greatly. In fact, the use of ampicillin in this condition may be a better diagnostic test for the disease than the Paul-Bunnell because the incidence of rash following the use of ampicillin in glandular fever has been reported to be as high as 80%. Benzyl penicillin also causes similar hypersensitivity reactions but in only 40% of patients.[18] The rash resulting from the administration of ampicillin in glandular fever is characteristic of penicillin hypersensitivity and is often very severe. The possibility that the abnormal protein produced in glandular fever combines with the ampicillin haptene to form a complete antigen must be considered.

A reaction confined to the use of methicillin is the syndrome of neutropenia and nephropathy.

The cephalosporins are, of course, closely related to the penicillins, and these compounds can themselves produce a rash very similar, if not identical, to that caused by penicillin. The important question as to whether there is cross-reactivity with the penicillins is at present being actively investigated. In the meantime, it would seem to be reasonable to recommend that patients known to be sensitive to penicillin should not be given cephalosporins if an alternative antibiotic is available.

Cephalosporin Nephrotoxicity

A complication of cephalosporin therapy which seems restricted to cephaloridine is that of nephrotoxicity. This complication has not been reported with either cephalothin or cephalexin. It is therefore pertinent to examine the differences between the cephalosporins. When cephaloridine and cephalothin are compared, it is apparent that cephaloridine differs from cephalothin in not being metabolized, in being painless on injection, and in giving higher and more sustained blood levels. It is also excreted by the glomeruli, and this may be related to the risk of renal toxicity. It is important to note that the risk of nephrotoxicity with cephaloridine is enhanced if certain diuretics (particularly furosemide) are given at the same time. The interesting possibility that the toxicity is associated with renin production must be considered in view of the recent report by Brown and his colleagues.[19]

The lesion produced following cephaloridine nephrotoxicity is an acute tubular necrosis, which particularly affects the proximal tubule. Following withdrawal of the drug, the lesion is reversible. Table VI shows details of 36 patients who developed this complication,[20] and it can be seen that it is very much more likely to occur when the dosage of cephaloridine is in excess of 6 gm daily.

Although 15 cases have been observed with doses of less than 6 gm, it must be appreciated that doses of this order are very much more commonly administered than doses exceeding 6 gm daily. Furthermore, the presence of renal failure in various degrees enhances the risk of the complication, and it is important to note that ten of the 36 cases were associated with bacterial endocarditis, and a further ten were suffering from septicemia or renal infection.

Since the renal lesion is reversible, peritoneal or hemodialysis must be considered for patients who develop renal failure due to nephrotoxicity following cephaloridine therapy.

The Aminoglycosides

Streptomycin This substance may cause pain on injection, and other immediate effects include parasthesiae around the mouth, vertigo and ataxia. However, the most important toxic effect is damage to the eighth nerve, and during short-term therapy this complication can nearly always be attributed to a dose which gives an excessively high blood level. It should be appreciated that a single very large dose can cause nerve damage, since once the substance reaches the endolymph, there will be a considerable lag period before it is eliminated. Animal experiments have localized the effect of the aminoglycosides to the sensory epithelia of the labyrinth.

Eighth nerve damage is also related to the duration of therapy, and in this context it is important to remember that older patients, and particularly those over the age of 50, not only are more likely to develop eighth nerve damage but also that, when this damage does occur, such patients are less well able to compensate. Care is also necessary when treating pregnant women because placental transfer of the streptomycin can occur causing damage to the eighth nerve of the fetus.

Other important toxic effects of streptomycin include hypersensitivity, which leads to a characteristic drug rash, with or without fever. This complication occurs in five per cent of patients given the drug and, although usually trivial, can be severe on occasion, and even fatal exfoliative dermatitis may develop. The drug rash may also be associated with lymphadenopathy.

Finally, it must be remembered that where streptomycin is administered in combination with other substances causing neuromuscular blockade, an additive or synergistic reaction may occur because of the action of streptomycin in reducing the sensitivity of the post-junctional end-plate membrane to the depolarizing effect of acetyl-choline. Thus, the use of streptomycin in combination with muscle relaxant drugs is best avoided, including the use of intraperitoneal streptomycin at operation.

Kanamycin and Gentamicin The aminoglycosides, kanamycin and gentamicin, are valuable in the treatment of bacteremia with hypotension. In such patients renal excretion may be impaired, and conventional dosage can therefore lead to high blood levels. Labyrinthine function may be affected, and this can become apparent both during therapy and between one and fourteen days after treatment. It is my practice to carry out daily visits on patients confined to bed and ask them to sit up and tell me whether they notice anything wrong. If they complain of symptoms such as imbalance, suggesting labyrinthine damage, I withdraw the drug immediately unless its continued use is essential as a lifesaving measure. It should be emphasized that such clinical observations are an indication for stopping these substances, even when blood levels are within normal limits. Unfortunately, disturbance of vestibular function may not be noticed until the patient becomes ambulant, when the course of treatment has been completed.

Effects on the eighth nerve are unusual if the peak kanamycin blood levels are kept below 20 μg/ml and gentamicin below 10 μg/ml, but it must be remembered that the administration of one excessive dose of either of these antibiotics can result in damage to the labyrinth due to spill over into the endolymph. Since it is impossible to obtain serum for assay of antibiotic level after each dose, the clinician may be unaware that this mishap has occurred, and this may explain occasional examples of toxicity where blood levels have been apparently satisfactory.

The Tetracyclines

Tetracyline is interesting in that cutaneous hypersensitivity is unusual, and when it does occur, it is often associated with certain long-acting compounds, notably demethylchlortetracycline, which can cause photosensitization following prolonged exposure to sunlight. Well-known but serious side effects of tetracycline are nausea, vomiting and diarrhea. The diarrhea may be mild, but it can also be severe and protracted. It is not necessarily dose related, and even after a small dose given for a short duration, diarrhea may continue for several weeks. The evidence that the tetracyclines produce their effects by allowing enhanced growth of *Candida sp.* is widely quoted, but unimpressive.[21] Unlike the penicillin group of drugs, this compound is not broken down in the intestinal canal, and following oral administration, analysis of feces shows levels in excess of 1 mg/gm. Very rarely the administration of tetracycline can precipitate a condition indistinguishable from ulcerative colitis, but the question of whether these patients were particularly liable to develop this condition must be considered. Another complication which has been observed following the administration of tetracycline is pseudomembranous enterocolitis, usually due to antibiotic resistant *Staphylococcus pyogenes.* This condition most often follows operative procedures on the alimentary canal.

That tetracycline can cause staining of teeth due to the chelating action of the tetracyclines seems to be beyond doubt. Staining occurs during calcification of the teeth; thus staining of deciduous teeth usually follows administration of tetracycline to the pregnant female after the fifth month of pregnancy. In the same way, staining of the permanent dentition can occur if tetracycline is given between six months and four years of age. The risk of producing this complication by tetracycline therapy at these times is not known, for there is little information about the incidence in relation to the amount or number of courses of tetracycline given.

Liver damage can result from tetracyclines, especially following intravenous administration, and fatty change and atrophy during pregnancy may be followed by death. The suggestion has been made that the liver damage may be due to degenerate forms of tetracycline (toxic epimers). Further information on this point would be useful in view of the established value of tetracycline in the treatment of *Bacteroides spp.* septicemia, a condition which is now being diagnosed more frequently.

Chloramphenicol

The toxicity of this drug is a very controversial subject. Chloramphenicol is an ana-

TABLE VII

Unwanted Effects Following the Administration of Nitrofurantoin

G.I. Tract	Nausea and vomiting
Allergic Reactions	Anaphylaxis Severe asthma Pulmonary edema, pleural effusion, eosinophilia
Anemia	Megaloblastic Haemolytic G-6-PD deficiency
Skin	Vesicular and morbiliform
Pulmonary	infiltration
Peripheral	neuropathy

TABLE VIII

SIDE EFFECTS OF TRIMETHOPRIM-SULFAMETHOXAZOLE AND PLACEBO

	Active Treatment	Placebo
Number studied	120	66
Vomiting	3	2
Dizziness	2	0
Sore tongue	1	0
Abdominal pain	1	0
Heartburn	0	1
Skin rash	1	0

logue of phenylalanine and binds specifically to the 50S subunit of bacterial ribosomes. The precise locus of its action has not yet been conclusively established, but it is likely that it inhibits the ribosome enzyme responsible for peptide bond formation. Its action, therefore, is to inhibit protein synthesis by blocking the growth of the peptide chain.

In higher microorganisms (yeasts and fungi) and in mammalian cells the site of action has been observed to be on the mitochondria, and its effect on such cells may be related to mitochondrial degeneration which would interfere with respiratory processes.

In animals it has been observed that chloramphenicol can inhibit reticulocytosis in rabbits made acutely anemic, inhibit antibody response and delay rejection of skin grafts. It has also been observed that in patients suffering from pernicious anemia administration of chloramphenicol, together with vitamin B_{12}, delays the reticulocyte response.

Toxicity of chloramphenicol in a newborn child is beyond doubt, and the gray syndrome is well known. Infants given doses of 100-160 mg/kg body weight develop vomiting, refusal to suck and abdominal distention after two or three days, and this is succeeded by flaccidity and ashen color, hypothermia, collapse and finally death.

In the adult, mild gastrointestinal side effects have been observed, but the most important and controversial question is that related to marrow aplasia. In 1963 the American Medical Association reported that of 674 patients developing marrow aplasia, 299 were chloramphenicol induced. Furthermore, marrow aplasia resulting from chloramphenicol tends to be irreversible and results in the death of the patient. However, two points must be borne in mind. First, individual workers report that very large doses have been given without toxicity, and others have observed thousands of patients treated with chloramphenicol without a single instance of marrow depression. Second, chloramphenicol is widely used in certain countries, notably Germany, Italy, and Spain, and a recent report from Israel[22] has shown that not a single case of marrow aplasia has been found after the use of chloramphenicol in thousands of cases.

A final point about chloramphenicol is that the original toxicity tests in animals gave a satisfactory result, and no toxicity was reported, a very salutary finding.

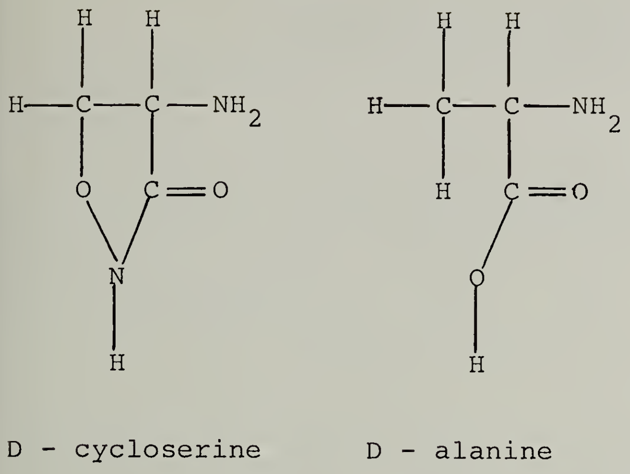
Erythromycin

All varieties of erythromycin can cause diarrhea, nausea and vomiting of varying severity. An important question is whether the estolate, which has the advantage of being better absorbed and therefore giving higher blood levels, is, nevertheless, contra-indicated because of its toxicity. The estolate derivative has been found to cause intrahepatic colistasis and liver cell necrosis, although there have been no deaths and recovery is complete when the drug is withdrawn. As in the case of other antibiotics, the risk is by no means clear. Robinson[23] found an incidence of hepatitis in 12% of patients receiving therapy with the estolate derivative for more than 14 days, whereas Kohlstaedt[24] in a survey could find only 33 patients suffering from intrahepatic colistasis following the administration of 15 million doses.

The Nitrofurans

The nitrofurans are somewhat underinvestigated, for they are potentially important chemotherapeutic substances and bacterial resistance does not develop readily. Nausea and vomiting following their administration are well-known, but a number of other toxic side effects have been reported, and these are summarized in Table VII. None of the

FIGURE 2



latter complications are common, but the finding of peripheral neuropathy following the administration of nitrofurantoin in renal failure is of great importance. The drug should not be given in the presence of a raised blood urea, and even tests on normal people by electromyography have shown that abnormal results can be detected, even in patients with normal renal function.

Nalidixic Acid

Again, this drug may cause nausea and diarrhea in 8%, although other side effects are unusual. It is important to remember to advise patients taking nalidixic acid not to expose themselves to the sun for prolonged periods, because of the danger of photosensitization. Visual disturbances with fortification spectra and flashing lights also occur, following the administration of this substance. Although alarming to the patient, these effects stop on withdrawal of the drug. Other effects of therapy rarely seen are vertigo, headache, mental changes, fever with eosinophilia, mild rashes with urticaria and respiratory depression (if respiratory insufficiency is present).

Cycloserine

This is a most interesting drug from the academic point of view. D-alanine is not used in human protein metabolism, and, as cycloserine is an analogue of this amino acid (Figure 2) it might be expected to be of low toxicity.

The action of d-cycloserine is interesting since it causes an accumulation in the cell of a muramic acid residue lacking in the terminal amino-groups. This is because both alanine racemase and d-alanyl-d-alanine synthetase are competitively inhibited by d-cycloserine. D-cycloserine has an affinity for the binding site on alanine racemase which is one hundred times greater than for the natural substrate, so that accumulation of muramic acid residues lacking in the terminal amino-groups on the oligopeptide side chain occurs.

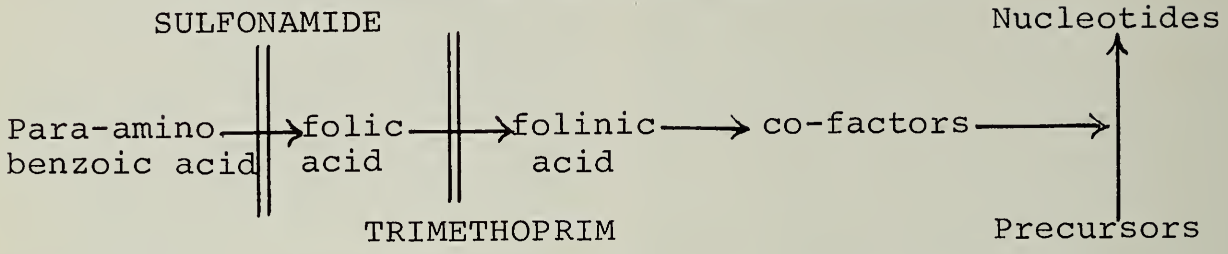
D-cycloserine toxicity is well known and may occur if the blood level exceeds 30 μg/ml. The most important toxic effect is on the central nervous system, and headaches, speech changes, dizziness, convulsions and coma may occur. Psychiatric disturbances ranging from mild changes to psychosis have been reported.

Trimethoprim

The newly introduced drug trimethoprim might be suspected of being toxic in view of its effect on dihydrofolate reductase, the enzyme responsible for the conversion of folic acid to folinic acid. (Figure 3) The lack of toxicity is related to the great difference between the affinity of trimethoprim for the human dihydrofolate reductase, which is extremely low, and its very high affinity for the equivalent bacterial enzyme. The modification to a molecule so as to exhibit differential toxicity is, of course, in keeping, with the approach to chemotherapy advocated by Ehrlich. In considering toxic effects of this drug, we studied the side effects on pregnant women receiving both sulfamethoxazole-trimethoprim combination, and a placebo. It was interesting to find that the number of patients suffering side effects was very similar in the two groups (Table VIII), which emphasizes the importance of using controls in toxicity studies where effects are subjective. However, the potentially serious effects of trimethoprim are, first, the possibility of its causing folate deficiency and thus interfering with hemopoiesis and, second, the relationship to fetal abnormality, since this has been reported in animals. Regarding the effect on hemopoiesis, changes might be expected in the marrow and peripheral granulocytes, red cells and platelets. In investigating such changes it is likely that the most valuable test would be an esti-

FIGURE 3

SITES OF ACTION OF SULFONAMIDE AND TRIMETHOPRIM.



mation of dihydrofolate reductase in either the marrow or peripheral leucocytes before and after treatment. Such work is currently in progress.

Another possible toxic effect of trimethoprim is in the production of fetal abnormalities, since this has been reported in animals.[25] However, we have carried out a follow-up of infants born to mothers treated with trimethoprim and found no evidence of an increased incidence of abnormality.[26]

In relation to teratogenicity caused by treating pregnant women with urinary infections it must be noted that, even if an antimicrobial was shown to cause fetal abnormalities, banning it in pregnancy *only* makes little contribution to the prevention of teratogenicity, since the principal time of organogenesis is during the first ten weeks. In practice it is unusual for pregnant women to have infections detected, let alone treated, before the fifteenth week of pregnancy. Therefore, in order to make a logical approach to prevention of fetal abnormalities due to chemotherapy it would be necessary to ban any antimicrobial drug under suspicion to all women liable to become pregnant, in order to prevent administration in early pregnancy.

It has already been inferred that translation of toxicity data from the animal to the human situation is dangerous. For instance, patients suffering from disseminated lupus erythematosus treated with azathioprine (Imuran, B.W. & Co.) have, until recently, been advised not to become pregnant since the score of fetal abnormalities in rats given azathioprine was very high. However, recently a few patients receiving azathioprine for the treatment of disseminated lupus erythematosus have become pregnant and, in spite of therapy with azathioprine throughout pregnancy, have delivered normal infants.[27]

Antibiotics in Renal Failure

Antibiotics can be extremely dangerous in renal failure if they are dependent on the renal route of excretion. Some antimicrobials excreted by this route can, however, be administered with only minor modification in dosage,[28,29] whereas others need both major modification of dosage and continuous monitoring of the blood level.[30]

Nitrofurantoin should never be given in renal failure because of the high risk of toxicity and amphotericin B should be avoided

Table IX

A General Guide to Modification of Antibiotic Dosage in the Presence of Impaired Renal Function

	Modification in dose
Penicillins Cephalosporins Erythromycin Chloramphenicol Fusidic acid	Minor
Tetracyclines Aminoglycosides Polymyxin Colistin Cycloserine	Major
Amphotericin B Nitrofurantoin	Avoid

when an alternative is available. A quantitative guide to the modification of dose required for a variety of antibiotics that may be used in renal failure is summarized in Table IX.

Conclusions

Antibiotics are, on the whole, extremely safe compounds, and with correct use and modification of dosage it is possible to use these substances without danger to the patient. Most complications would be avoided if a history were taken from the patient and precipitating causes of trouble, such as impairment of renal function, anticipated. Unfortunately, one of the more serious reasons for adverse reaction to antibiotics is their widespread use in seriously ill patients when there is no proper indication. If the use of antibiotics were discontinued for conditions such as virus respiratory infections and glandular fever, where they have no therapeutic value, a number of needless adverse reactions would be avoided.

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INFECTIONS DUE TO NON-SPOREFORMING ANAEROBIC BACTERIA

• Non-sporeforming anaerobic bacteria undoubtedly cause many infections but the diagnosis is often missed because they are not suspected and because culture techniques are not adequate.

Sydney M. Finegold, M.D.

Infections with non-sporulating anaerobes are found relatively often when clinicians and bacteriologists are aware of their importance and proper bacteriologic techniques are used. Thus Lodenkämper and Stienen[1] diagnosed 690 anaerobic infections during an eight-year period. Of these, 239 yielded gram-negative anaerobic bacilli in pure culture. Stokes[2] found anaerobes in over 10% of 4,737 positive cultures from all types of clinical material. In this series, purulent exudate from abdominal and genital infections yielded anaerobes in essentially one-third of the specimens. Gram-negative non-sporeforming anaerobic bacilli and anaerobic cocci were present in equal numbers and together accounted for almost 90% of the anaerobes isolated. Only one in 15 anaerobic isolates was a *Clostridium.*

The present report will not consider gram-positive non-sporulating anaerobes and their role in infectious processes since these organisms are found much less commonly than other non-sporulating anaerobes, since their classification is very much uncertain at present, and since good information on the most commonly encountered organisms of this group *(Actinomyces)* and related infections is readily available.

Infections Due to Gram-negative Anaerobic

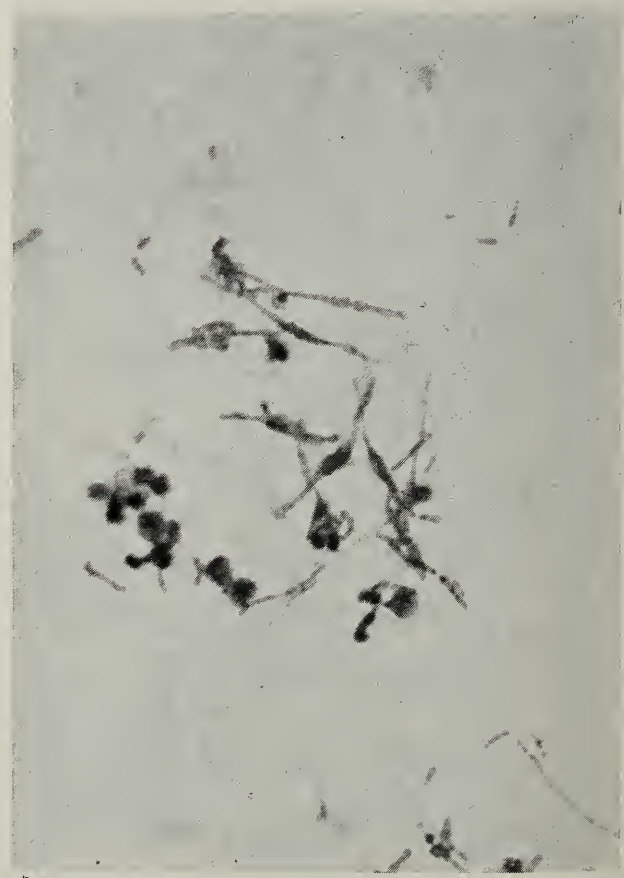

Figure 1

Microscopic morphology Sphaerophorus. Note filaments with swellings along course, large round bodies, and irregularity of staining.*

*From Medical Times 96:174, 1968.

Dr. Finegold is Chief, Infectious Disease Section, Wadsworth Veterans Administration Hospital, Los Angeles, California.

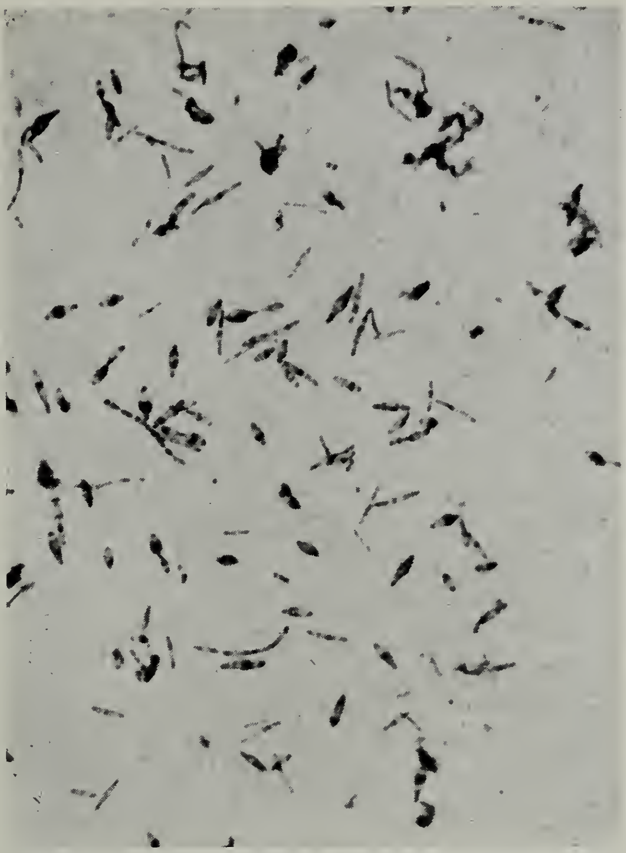

Figure 2

Microscopic morphology B. fragilis. Note pleomorphism and irregular staining.*

*From The Anaerobic Bacteria, proceedings of an International Workshop held at the University of Montreal, 1968. Edited by V. Fredette.

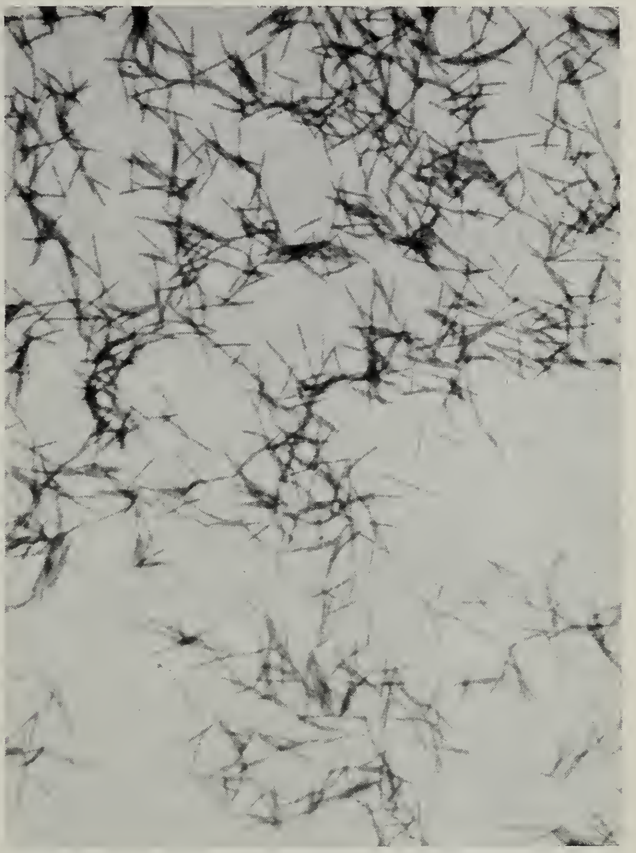

Figure 3

Microscopic morphology F. fusiforme. Note the long, thin bacilli with tapered ends.*

*From The Anaerobic Bacteria, proceedings of an International Workshop held at the University of Montreal, 1968. Edited by V. Fredette.

Bacilli. — The organisms in this group are presently classified in three major genera: *Bacteroides*, *Sphaerophorus*, and *Fusobacterium*. Several species are encountered frequently — *B. fragilis*, *B. melaninogenicus (B. nigrescens)*, *B. oralis*, *S. necrophorus (F. necrophorus*, *B. funduliformis)*, *S. mortiferus*, *S. varius* and *F. fusiforme*. *B. fragilis* is isolated much more often than the others, perhaps partly related to the fact that it is less fastidious. Although *B. oralis* is encountered in clinical material occasionally, together with other organisms, its role in infection is uncertain.

These organisms commonly display unique microscopic or colonial morphology; this may allow the clinician and bacteriologist to suspect their presence when examining gram stains of exudates or cultures. Carbol fuchsin is the counterstain of choice for the gram stain when these organisms may be present; even with it, however, this group characteristically stains lightly. Irregularity of staining (light and dark areas scattered randomly) is also characteristic. Members of the genus *Sphaerophorus* are usually the most pleomorphic of the group, often showing filamentous forms, swellings along the filaments, and detached large round bodies (Figure 1). *B. fragilis* (Figure 2) and *B. oralis* are usually less pleomorphic and less distinctive. *F. fusiforme* (Figure 3) usually stains evenly and is not pleomorphic, but is very distinctive in that it occurs as thin, long bacilli with tapered ends; often organisms appear in pairs. *B. melaninogenicus* may be bacillary and pleomorphic but most often occurs as regularly staining coccobacilli (Figure 4); its most distinctive feature

Table 1

Clinical Experience with Gram-Negative Anaerobic Bacilli

Number of Cases	Type of Infection
12	Bacteremia
1	Subacute bacterial endocarditis
2	Urinary tract infection
14	Peritonitis
29	Intra-abdominal abscess
27	Other abscesses (including lung, brain, liver, breast, ovarian, subcutaneous)
26	Wound infection (chiefly following bowel surgery)
11	Thoracic empyema
19	Miscellaneous infections (including meningitis, mastoiditis, pylephlebitis, pneumonia, osteomyelitis and endometritis)
141	

Modified from Finegold SM and Hewitt WL: *Proc VIII International Congress for Microbiology*, Montreal, E 35.2, 1962.

is the brown-black colonial pigment developing on blood-containing media (Figure 5).

The gram-negative abnaeroic bacilli form a prominent part of the normal endogenous flora of man. They are present on essentially all mucous membrane surfaces of the body — the mouth, upper respiratory tract, gastrointestinal tract and the genital tract. In the colon, these organisms (particularly *B. fragilis)* are the predominant element of the flora, outnumbering *E. coli* 1000 to one.[3] They play a role in certain pathophysiologic processes such as the blind loop syndrome.[4]

Table 2

Anaerobic Coccal Infections

	No. Cases
Subacute bacterial endocarditis	10
Bacteremia	2
Brain abscess	5
Liver abscess	3
Pneumonia, lung abscess, empyema	12
Intra-abdominal abscess	6
Peritonitis	2
Pelvic abscess, Bartholin abscess, septic abortion	3
Perirectal abscess, infected pilonidal cyst	4
Wound infection (following bowel surgery, nephrostomy, etc.)	7
Soft tissue infections (some with gas in tissues)	16
Osteomyelitis	6
Suppurative myositis	1
Maxillary sinusitis	1
Infected human bite	1
	79

Modified from Finegold, Miller, and Sutter. *Bacteriol Proc* 94, 1968.

These organisms also cause a variety of infections of virtually all types, mostly in proximity to the mucosal surfaces where they exist normally. Table 1 summarizes our clinical experiences with infections involving gram-negative anaerobic bacilli.[5] These organisms were isolated in pure culture in one-third of the cases, with *B. fragilis* the most common isolate. In mixed infections, a variety of other anaerobes and aerobes are encountered. X-rays from three of the patients in our series are shown in Figure 6, 7 and 8.

A number of these infections were very difficult to manage and led to prolonged hospitalization and disability and, at times, to extensive tissue destruction and death. Abscess formation was common, and septic thrombophlebitis was encountered occasionally. A number of the infections, particularly among those related to the gastrointestinal tract, were associated with malignancy. Some followed systemic or topical use of kanamycin or neomycin, agents to which this group (and anaerobes generally) are quite resistant.

The patient with subacute bacterial endocarditis was a particular problem. The infecting organism was *B. fragilis*, and it was not possible to find an antibiotic or combination of antibiotics with clinically significant bactericidal activity against it. Remissions were obtained repeatedly, usually with a combination of tetracycline and erythromycin, but despite prolonged courses of therapy (some exceeding three months) the patient would always relapse clinically and bacteriologically soon after therapy was discontinued. The patient ultimately died after over two years of intermittent treatment.

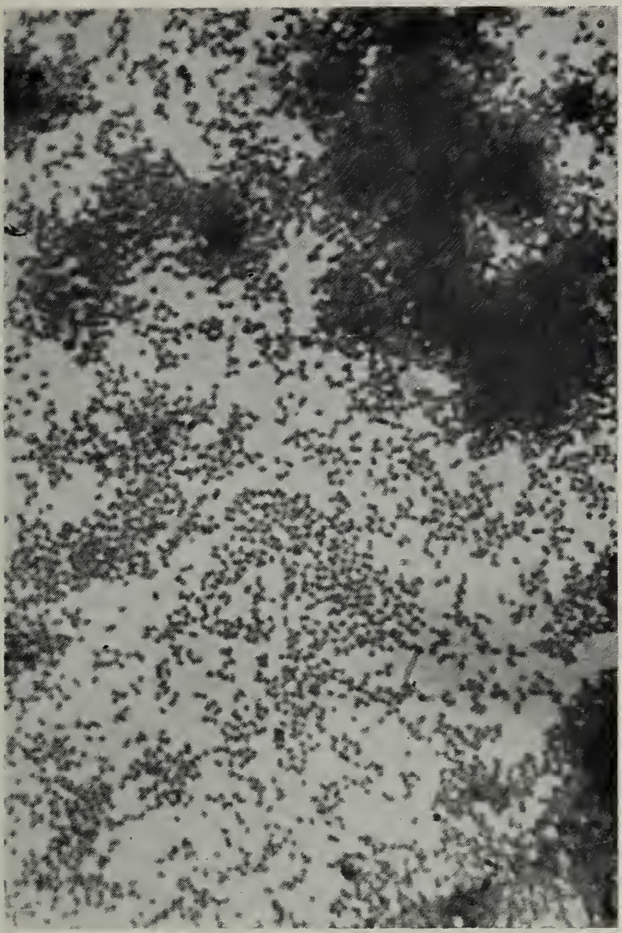

Figure 4

Microscopic, morphology B. melaninogenicus. Organisms are coccobacilli.*

*Reproduced from Gradwohl's Clinical Laboratory Methods and Diagnosis, 7th Edition, C.V. Mosby Co., St. Louis, Mo.

Infections Due to Anaerobic Cocci

Present classification systems for these organisms are not entirely satisfactory. However, for clinical purposes, it is usually adequate to note whether they are cocci (in pairs or masses) or streptococci, whether they are obligately anaerobic or microaerophilic, what type of hemolysis is produced (if any), and whether they are gram-positive or gram-negative. Anaerobic cocci are also widely distributed as normal flora in humans; compared to the gram-negative anaerobic bacilli, the cocci are more prevalent in the genital and

TABLE 3

SUSCEPTIBILITY OF NON-SPORULATING ANAEROBES TO CLINICALLY USEFUL ANTIBIOTICS

	Anaerobic Cocci	Bacteroides fragilis	Sphaerophorus	Other Bacteroides and Fusobacterium
Penicillin G	+ + + +*	+	+ + +*	+ + + +
Tetracycline	+ +	+ + + +	+ + +	+ + +
Chloramphenicol	+ + +	+ + +	+ + +	+ + +
Lincomycin	+ + +	+ to + +	+ + +**	+ + +
Erythromycin	+ + +	+ +	+	+ to + +
Vancomycin	+ + +	+	+	+

*+ + + + Drug of choice

+ Poor or inconsistent activity

+ + + Good activity

+ + Moderate activity

** Few strains resistant

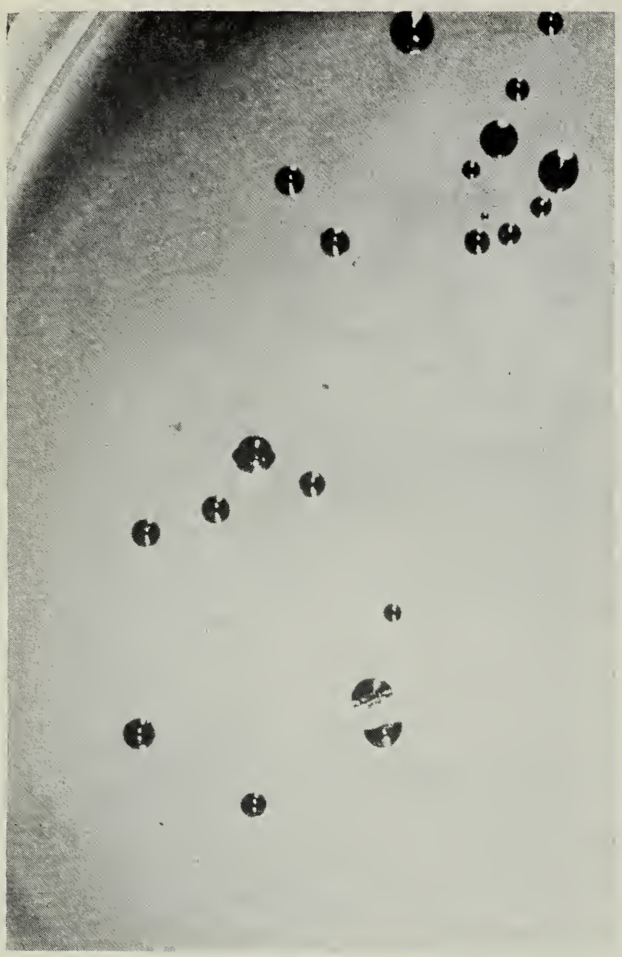

Figure 5

Colony morphology B. melaninogenicus. Note black pigment.*

*From Medical Times 96:174, 1968.

upper respiratory tracts and relatively scarce in the gastrointestinal tract.

The microscopic morphology of anaerobic cocci is not very unique; however, they are often tiny or distinctly smaller than aerobic (facultative) forms.

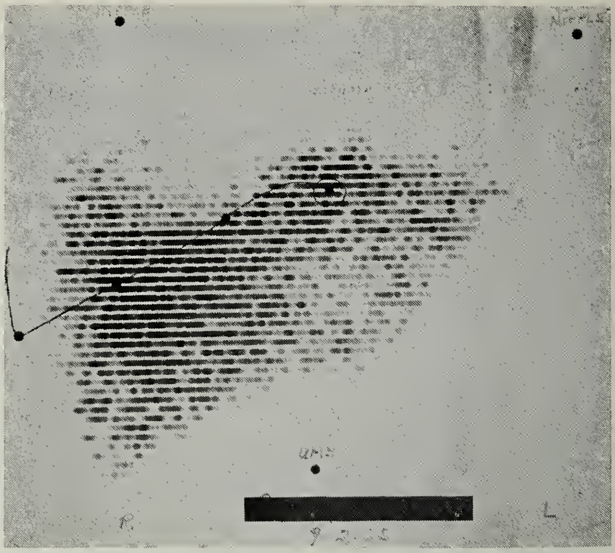

Figure 6-A

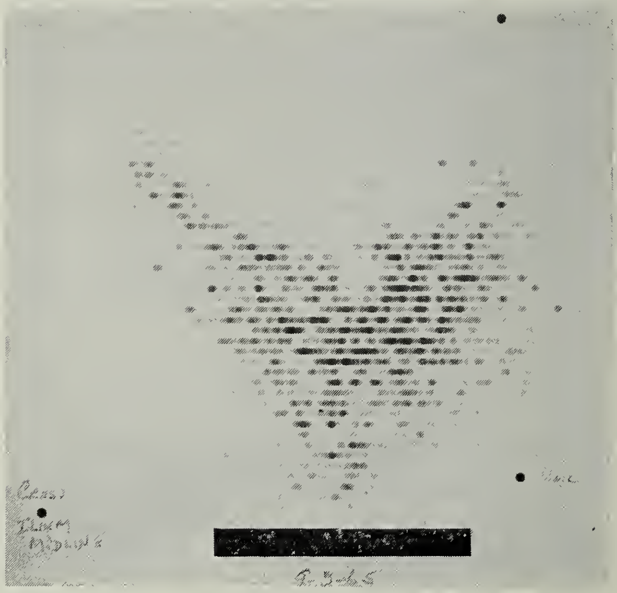

Figure 6-B

A-P and lateral Au^{198} liver scan from patient with microaerophilic streptococcal liver abscess, showing a large space-occupying lesion in the upper right lobe.*

*From Annals of Surgery 165:362, 1967.

In general, the anaerobic cocci produce infections similar to those produced by the gram-negative anaerobic bacilli with differences related to the above-mentioned differences in distribution in the body. Two other major differences in types of infection encountered are a much greater incidence of subacute bacterial endocarditis (10% of our cases of subacute endocarditis over a ten-year period were due to anaerobic cocci) and the capability of anaerobic cocci to produce suppurative myositis. Our clinical experience with these organisms[6] is given in Table 2. As with the gram-negative anaerobic bacilli, anaerobic cocci were isolated in pure culture from one-third of the infections in which they were involved. Figure 6A, B shows liver scans from a patient with liver abscess, and Figure 7 shows the gram stain of the pus obtained from

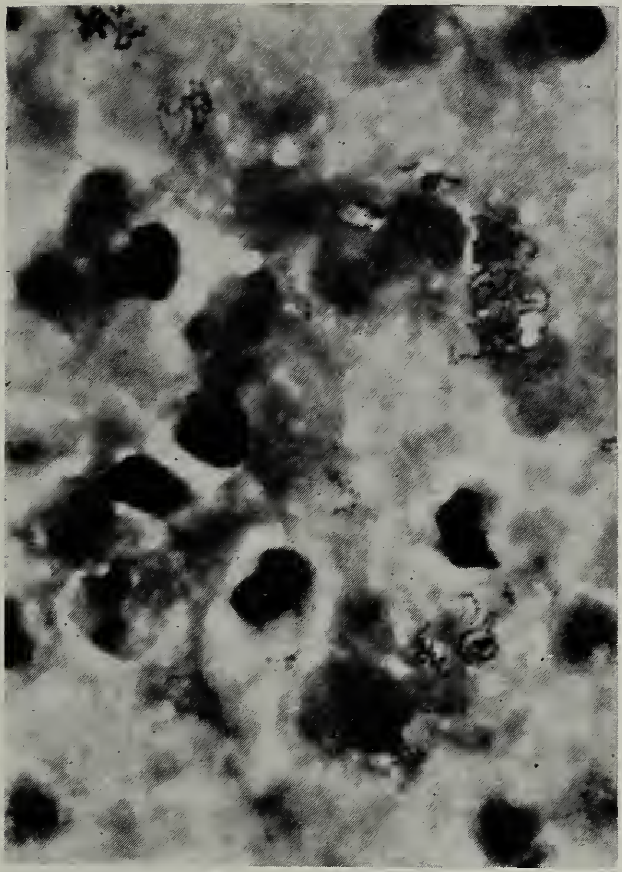

Figure 7

Gram stain of pus from the liver abscess shown in Figure 9. Note the chains of small cocci. (Magnification x 1000)

this abscess at surgery; microaerophilic streptococci were isolated in pure culture. Figure 8 shows extensive edema and tissue destruction in a finger involved in a mixed infection with anaerobic streptococci and *S. aureus.*

Diagnosis of Anaerobic Infections

The frequency of diagnosis of these infections varies directly with the knowledge and interest of clinicians and bacteriologists. The use of anaerobic jars or even better anaerobic systems is imperative. Five to 10% carbon dioxide must be provided in the atmosphere. Many smaller laboratories use fluid thioglycollate medium as the only procedure for isolation of anaerobes; this is entirely inadequate. The commercial blood culture bottles presently recommended for anaerobic culture are unsatisfactory. Screw-capped blood culture bottles (without a rubber diaphragm) should be incubated, with the caps loosened, in an anaerobic jar.

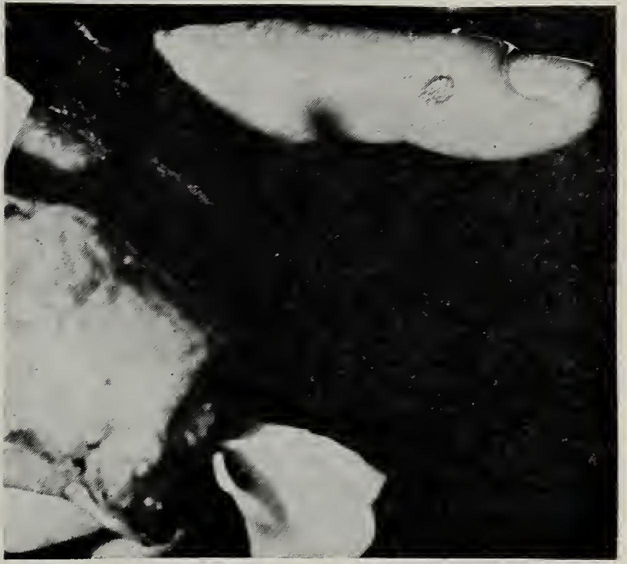

Figure 8

Mixed infection of finger due to anaerobic streptococcus and S. aureus. Precipitating event unknown. Partial amputation, through and through incision and drainage, and chemotherapy led to cure.

The most important clinical clue to the possible presence of anaerobes in infection is foul-smelling discharge; this essentially always means anaerobes are involved. Other tip-offs include location of infection near a mucosal surface, necrotic tissue or gangrene, gas in tissues or discharges, infection associated with malignancy or other process producing tissue destruction, infection related to the systemic or topical use of kanamycin or related agents, septic thrombophlebitis, infection following bites, subacute bacterial endocarditis with negative blood cultures, gram stain of discharge showing characteristic organisms, failure of the laboratory to recover on routine culture organisms seen on direct smear, or total absence of growth from purulent exudate. The importance of the gram stain cannot be overemphasized; it alerts one to the possibility of anaerobic infection, it serves as a check on culture technique, and it provides a tentative bacteriologic diagnosis two to

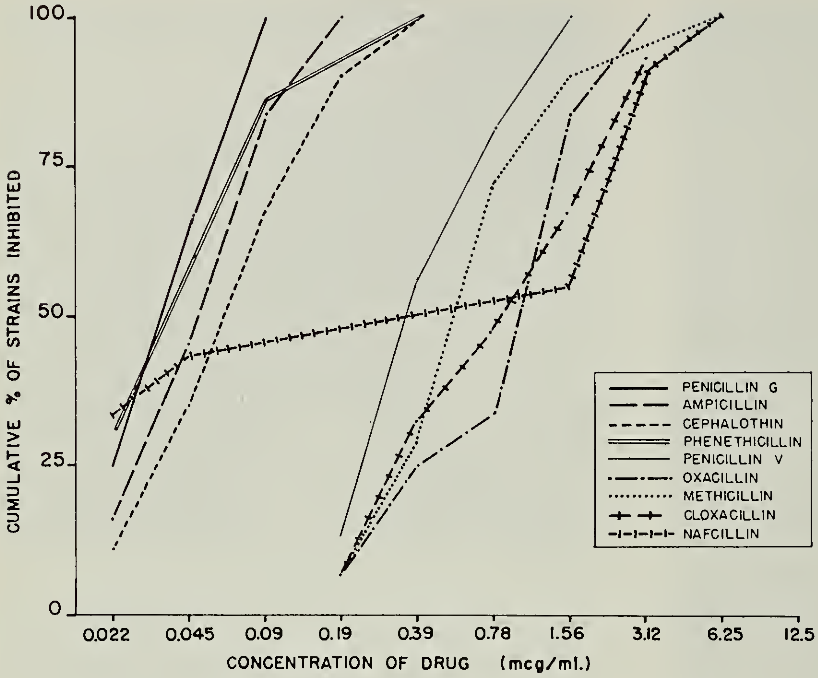

Figure 9

Activity of penicillin-like drugs vs. B. melaninogenicus.*

*From Medical Times 96:174, 1968.

three days or more before even preliminary cultural results are available.

There are two problems to be kept in mind with regard to collection of specimens from patients with possible anaerobic infection. Care must be taken to avoid "contamination" with normal anaerobic flora. In the case of pulmonary infections, the normal mouth and pharyngeal flora may best be bypassed by means of transtracheal puncture, and with urinary tract infections (anaerobes are not often involved in these), percutaneous bladder puncture bypasses the normal urethral flora.[7] Other types of infections may present a challenge for means to avoid normal flora. The other problem concerns maintaining anaerobiosis from the time a specimen is obtained until it is cultured anaerobically, so that the more fastidious anaerobes will not die off. Displacing all of the air in a screw-capped Wasserman tube with the specimen works well. With smaller specimens, place in tube with atmosphere of oxygen-free gas by means of syringe and needle.[8]

Therapeutic Considerations

Drainage of collections of pus and excision of necrotic tissue are extremely important aspects of therapy. Hydrogen peroxide may be useful as a local measure, and hyperbaric oxygen may play a role in unusual infections involving non-sporulating anaerobes.

The susceptibility of various non-sporeforming anaerobes to the most useful antibiotics is noted in Table 3. Penicillin G is the most active of these drugs and exhibits the best bactericidal activity; it is the drug of choice for all anaerobic infections except those due to *B. fragilis* and to strains of *Sphaerophorus* resistant to it. Other penicillins and the cephalosporins are usually less active than penicillin G and sometimes have no clinically useful activity. This is illustrated, for *B. melaninogenicus*, in Figure 9. The degree of activity of various penicillins and cephalosporins varies with the type of organism, but ampicillin and cephaloridine generally approach penicillin G in activity.

Summary

Infections due to non-sporulating anaerobes are at least ten times as common as those due to *clostridia* and undoubtedly represent the most frequently undiagnosed or misdiagnosed of the bacterial infections. These anaerobes

(Continued on page 306)

TULAREMIA IN HAMSTER HUNTERS

• Tularemia is one of the most common examples of zoonosis presenting in medical practice today. Accurate diagnosis is enhanced if the clinician is aware of the presence of the disease in his locale.

Joseph Szekelyfoldi, M.D.

The first cases of tularemia in central Europe occurred in Marchfeld in 1936-1937. In neighboring western Hungary, the first infection was not seen until 1951. Since then cases have been seen regularly, and the source has been wild rabbits.

In our area of Hungary, which is 300 miles from the area of recurring infections, the first cases were seen in 1966 when eighteen cases were diagnosed. In each case, the source of the infection was hamsters.

Hamsters are hunted for their precious skin, especially in spring and autumn when the fur is heaviest. Humans handling the hamsters may be infected in various ways. The hunter who removes the hamster from the trap may be bitten and thus infected. Others are scratched by the teeth in the process of skinning the animal, as the skin is removed around the head. Individuals may also be infected while handling the skin as it is dried. In addition, contact with the ectoparasites of the rodent and any food or water contaminated by the animal, for instance, field products such as sugar beets, may be the source of the organisms. One epidemic in 1966 was even traced to breathing contaminated air in a sugar factory where the beets were being processed.

We investigated this epidemic to determine how the infection came to our area, if there were asymptomatic cases and how the infection might be prevented.

All of our patients were hamster hunters. The disease first occurred in the first and fourth quarters of 1966. The disease was localized in four villages beside the Berettyo River. Only one of the eighteen cases was a woman, and all patients were over twenty years old.

The affected hand was usually the left, and the area of the wound was painful. There was lymphangitis up to the axilla, which also contained swollen, painful lymph nodes. Diagnosis was confirmed by both a serum agglutination test and a positive skin test. The patients were all treated with tetracycline and streptomycin. All symptoms quickly disappeared except for the swollen lymph nodes, which slowly decreased in size.

Since all of the cases were in hamster hunters, we considered why the hamsters in our area were suddenly infected. There was no importing of rabbits from the western areas, considered endemic. Other known reservoirs such as mice, rats, hares and limmings did not appear to be the source. It seems probable that the infected hamsters came to us from bordering Rumanian areas along the Berettyo, since our epidemic was confined to the river area. Tularemia has been found in hamster hunters in Rumania, with an epidemic reported in 1955 by Mr. Condrea.

To confirm that the infection was confined to the river area and to determine how widespread the infection was among our hamster hunters, we did the tularin skin test. This test has been reported by Jirovec to be positive in individuals who have had tularemia for as long as 15-17 years after the infection.

We tested 324 handlers of hamsters in twenty villages in the area. The skin test was read 48 hours after application of the

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tularin. Twenty individuals, 6.1%, gave a positive reaction. Three of these had had the cutaneous, glandular infection in 1965 and three others in 1966. At the time of testing, a residue of clinical symptoms could be found, but none were treated. Nine others reported no history of symptoms, and it is supposed that the infection was subclinical.

An investigation by Ljung[1] revealed that 11% of a population not selected for an epidemic had positive tularin skin tests and that 90% of those known to be infected gave a positive test. Because of our lower incidence, 6.1%, we concluded that we have no group infected in previous years and that the infection was introduced to our area shortly before the first infections were seen in 1965.

The association of the infection with hamsters suggests the measures needed to prevent further infections. The hunters have been warned that a bite or scratch during skinning may lead to disease. It has been suggested that a defending thimble be used while handling or skinning the animals. They have also been told to see a doctor at once if they notice swollen lymph nodes and a high fever.

The doctors have been alerted to think of tularemia when they see swollen lymph nodes and to confirm diagnosis by the blood test and skin test.

The most important preventive measure would be the vaccination of the hamster catchers. The scarification tularemia vaccination immunizes for five years. Permission for catching hamsters could be denied until vaccination has been obtained.

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INFECTIONS DUE TO NON-SPOREFORMING ANAEROBIC BACTERIA

(Continued from page 304)

(chiefly gram-negative bacilli and gram-positive cocci) may cause virtually any type of infection in any area of the body. Major clues suggesting the possibility of anaerobic infection include foul-smelling discharge, gas in tissues, tissue necrosis, absence of growth in routine culture despite presence of organisms on direct smear, and the unique morphology of certain of these organisms on gram stain. Diagnostic difficulties relate to unawareness of these anaerobes and failure to maintain anaerobiosis or to exclude normal flora when obtaining specimens. Drainage of abscesses and excision of necrotic tissue are important therapeutic considerations. Antibiotics most useful are tetracycline, chloramphenicol, penicillin G and lincomycin.

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> "When you meet with a fact opposed to a prevailing theory you should adhere to the *fact* and abandon the theory even when the latter is supported by great authorities and generally accepted."
>
> *C. Bernard*

CARBENICILLIN IN PULMONARY INFECTION COMPLICATING CYSTIC FIBROSIS

• Carbenicillin appears to be an effective agent for the treatment of pseudomonas infections in patients with cystic fibrosis.

Eva Africa, M.D.
Herman Rosenblum, M.D.

The predominant organism recovered from throat and sputum cultures of patients with cystic fibrosis is currently a *Pseudomonas aeruginosa.* The sputum and throat cultures of the patients attending Cystic Fibrosis Clinic of the Wilmington Medical Center are currently being studied to evaluate the bacterial flora as an aid in the selection of the appropriate antibiotic.* The antibiotic carbenicillin is currently being evaluated as an agent in the therapy of *Pseudomonas aeruginosa* infections and specifically in cystic fibrosis patients.

We should like to present the case summaries of these four patients with cystic fibrosis who were admitted in respiratory distress to the Department of Pediatrics of the Wilmington Medical Center. These patients were all treated with carbenicillin, either alone or in combination with cephalothin. The clinical response was good in all four patients with temporary alleviation of symptoms and in one patient marked improvement of the chest x-ray.

A fifteen-year-old white boy, had been diagnosed as having cystic fibrosis at the age of three years. He was first admitted to the Wilmington Medical Center on June 27, 1969, because of fatigue of two months' duration, cough and fever. Prior to admission his antibiotic therapy consisted of oxacillin, 500 mg, and tetracycline, 250 mg three times a day, respectively. One week prior to admission his temperature ranged from 100-102°.

On admission he appeared chronically and acutely ill and dyspneic. Examination of his lungs revealed rales bilaterally. There was 4+ clubbing of the fingers. A sputum culture was taken prior to antibiotic therapy and revealed a marked increase in *Pseudomonas aeruginosa* which was sensitive to carbenicillin. A chest x-ray revealed several bilateral changes with fibrosis and areas of infiltration. He was treated with intravenous carbenicillin, 500 mg/kg/day in twelve divided doses for fourteen days. His clinical response was excellent, he became and remained afebrile throughout his hospitalization. Dyspnea subsided, cough became minimal and rales were not heard after clinical improvement became evident. There was marked improvement in the chest x-ray.

About eight and one-half months later he was readmitted because of sharp chest pain on respiration and tachypnea of a few days' duration. On physical examination he appeared chronically and acutely ill, dyspneic and tachypneic. He was coughing incessantly and there were disseminated rales in his chest. Respiratory rate was 40 per minute. His sputum culture showed a *Pseudomonas aeruginosa* which was sensitive to carbenicil-

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* Supported by a grant from the National Cystic Fibiosis Research Foundation.

lin. He again received a fourteen-day course of I. V. carbenicillin, 500 mg/kg/day in twelve divided doses. Response to therapy was again excellent both clinically and in improvement of his x-ray.

A three and one-half year old white girl was diagnosed as having cystic fibrosis at the age of six months. She was admitted to the Delaware Division for the first time on November 13, 1968, because of tachypnea, cough and wheezing of one day's duration. On physical examination she appeared acutely ill, coughing continuously and tachypneic. Examination of the lungs revealed expiratory wheezes and rales at both lung bases. A throat culture revealed a *Pseudomonas aeruginosa* sensitive to carbenicillin and a *Staphylococcus aureus* resistant to penicillin. Chest x-ray revealed extensive diffuse infiltrates throughout both lung fields. Treatment consisted of carbenicillin, 300 mg/kg/BW/day for a total of eight and one-half days. A throat culture taken after completion of therapy revealed a normal flora. Her appetite improved once her cough had subsided, and she gained one pound of body weight during her hospital stay. Her clinical response was considered good.

A nine-month-old white boy, was diagnosed as a case of cystic fibrosis at the age of two months. On July 8, 1968, he was admitted for the second time to the Delaware Division because of failure to thrive and tachypnea. He was receiving Prostaphlin (Bristol) as an outpatient. About one month prior to admission he developed a cough and was failing to gain weight. On admission he looked chronically ill, was tachypneic with a respiratory rate of 60 per minute. Auscultation of the lungs revealed no rales, but breath sounds were increased in intensity. Chest x-ray revealed hyperaeration. Throat culture revealed normal flora. Despite the normal flora in the throat culture it was decided to treat him with carbenicillin, 200 mg/kg/day. After 10 days of I. V. carbenicillin, he was discharged markedly improved, without tachypnea and having gained one pound of body weight.

Our fourth case is that of an eight-month-old white boy who was admitted in November of 1969 for failure to thrive, vomiting and tachypnea. This infant had had feeding problems since birth for which multiple changes in formula had been made. At six months of age a sweat chloride was obtained which revealed a value of 31 mEq/L. He was presumed to have a cow's milk allergy. On admission he appeared chronically and acutely ill, tachypneic, grunting with respiration rate of 36 per minute and a weight of 12 pounds, 6 ounces. Examination of the chest revealed diffuse rales. He developed rectal prolapse which prompted re-evaluation of the sweat chlorides which on two occasions gave values of 91 mEq/L and 121 mEq/L. On December 3, 1969, a throat culture revealed 50% *Pseudomonas aeruginosa* sensitive to carbenicillin, gentamicin and tetracycline and 20% *Klebsiella aerogenes* resistant to carbenicillin but sensitive to cephalothin. With this sensitivity study, it was decided to treat him with a 14-day course of I. V. carbenicillin, 300 mg/kg/day and cephalothin. Response to therapy was excellent.

In summary, the case histories of four patients with cystic fibrosis and pulmonary complications are presented. The results of carbenicillin therapy are encouraging for at least temporary improvement of the symptoms.

* * *

MAN IS AGGRESSIVE

That man is an aggressive creature will hardly be disputed. With the exception of certain rodents, no other vertebrae habitually destroys members of his own species . . . Although we may recoil in horror when we read in newspapers or history books of the atrocities committed by man upon man, we know in our hearts that each one of us harbors within himself those same savage impulses which lead to murder, to torture and to war.

(From the opening paragraph of *Human Aggression by Anthony Starr)*

KIDNEY TUBERCULOSIS

• **Effective antimicrobial therapy has lowered the incidence of renal tuberculosis and obviated the need for a surgical approach to the problem. A high index of suspicion is still necessary for diagnosis.**

John K. Lattimer, M.D., Sc.D.

Renal tuberculosis can still destroy the kidneys in three or four years, if unrecognized, and untreated. We have had cases where it destroyed them rapidly and insidiously, causing very few symptoms.

While the incidence of renal tuberculosis in native Americans is at least showing signs of a decline, we have so many patients arriving in our port cities, and the giant airplane is bringing in so many visitors, that we are bound to have a continuing tuberculosis problem.

Fortunately, this serious complication of tuberculosis can now almost always be controlled with nonoperative therapy. Persistent specific chemotherapy, combined with conscientious monitoring by cystoscopic, x-ray and laboratory examinations, has gradually permitted medicines to supplant the knife, in the years since 1946. Eighteen years of faithful follow-up observations on several hundred cases of this relatively rare disease by the Research Unit for Genitourinary Tuberculosis of the Kingsbridge Veterans Administration Hospital and the Columbia University Department of Urology appear to justify this position. For example, in one group of 333 patients in whom the effects of chemotherapy alone could be well evaluated, it was possible eventually to arrest every case, regardless of the extent or activity of the disease, by the persistent reapplication of new combinations of drugs to the patients who relapsed. Fifteen per cent of the patients required two, 5% three, and 1% four regimens of treatment.[1] Careful attention to the principle of multiple-drug (three drugs) administration and long-term (two years) duration of each regimen was necessary to achieve this result. At the two hospitals involved, the Presbyterian Hospital and the Kingsbridge Veterans Administration Hospital in New York City, it has not been necessary to do any nephrectomies because of tuberculosis for the past seven years. The only two tuberculous kidneys that were removed within this period at either hospital were in children, of whom one had a tuberculous mass that could not be differentiated with certainty from a Wilms' tumor, and the other the thin-walled shell of a previously tuberculous kidney, which was removed in an effort to stimulate more rapid compensatory hypertrophy on the contralateral side. In neither case was progression of the tuberculosis the reason for the nephrectomy. It is acknowledged that intractable pain or secondary infection behind a tuberculous ureteral stricture might force a nephrectomy to be done, but no such cases have been encountered in seven years.

One group of 22 large, nonfunctioning tuberculous kidneys was left in place when the urine had become negative after chemotherapy, and neither relapses nor complications such as hypertension have yet developed in this group, which has now been observed for an average of seven years.[2] It should be noted that after surveying a similar group of patients treated in England, one observer still suggested that traditional excisional therapy should be utilized for large lesions, even though his most modern chemotherapy had brought about superb (total) conversions of

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the urine in 200 cases whereas nephrectomy had converted only one out of six.[3]

Scattered reports of small series of cases from other points in the world suggest that multiple-drug, long-term chemotherapy is indeed effective but that occasional patients may require either extraordinary persistence and reapplication of chemotherapy or ultimate excision. There appears to be some belief that excision after chemotherapy might shorten the period of treatment or morbidity, but there is no proof of this, and the necessity for prolonged and conscientious follow-up examinations still would not be avoided. In my opinion the follow-up examinations would be necessary even if excision was added.

Effective Orally Administered Medications

The advent of such effective antituberculosis agents as isoniazid, sodium para-aminosalicylic acid (PAS), ethambutol, ethionamide and cycloserine has made it possible to put aside injectable drugs such as streptomycin, dihydrostreptomycin, viomycin and kanamycin, except for the retreatment of refractory cases. Regimens consisting of isoniazid, 100 mg three times daily, and sodium PAS, 5 gm three times daily, given continuously over a two-year period, have brought about seven-year conversion rates of the order of 81% on the first attempt. It should be noted that any long-term isoniazid regimen should be accompanied by pyridoxine, 50 mg twice daily, as a preventive against possible neuritis. It has been the custom of this research unit to combine six months of semiambulatory bed rest with the beginning of the two-year treatment, but this has not proved to be an essential measure.[4]

Similar groups given triple-drug treatment, over a two-year period, have consistently yielded slightly higher percentages of conversions, two, five and eight years after the beginning of treatment, than the comparable groups of patients treated with only two drugs.[5] The advantage of the triple-drug groups over the two-drug groups has been statistically significant only at about the 5% level, however. It has been suggested that this apparent slight superiority might represent the fact that some patients tend to skip doses of a drug with annoying side effects, such as sodium PAS, whereas they might continue to take less toxic drugs such as isoniazid or cycloserine without interruption (there is a tradition to the effect that outside every sanatorium window there is a patch where the grass will not grow because of the PAS pills that were thrown out by the more sophisticated patients). The fact that a two-drug regimen would suffer severely in efficacy if the PAS were omitted, whereas a triple-drug regimen would suffer a great deal less from this same omission, might account for the statistical difference in the two groups of patients. Further evidence for the efficacy of the two-drug treatment, when taken faithfully, appears when the comparisons of the two-drug and triple-drug regimens are confined only to the cases showing a high output of tubercle bacilli in the urine. In this comparison the two become approximately equal in efficacy.

Responsiveness of renal tuberculous lesions to chemotherapy has been demonstrated to be much poorer in patients who are putting out large numbers of tubercle bacilli in the urine, so that more than one of their twenty-four-hour concentrates is positive. Patients who have produced only an isolated positive urine culture are much more likely to respond to chemotherapy according to the work of Segawa and Reilly.[1] This bacteriologic activity is even more important than the magnitude and extent of the lesions in the kidney, in deciding prognosis. Although massive cavitary lesions may be more difficult to arrest than minimal lesions (in which no cavity can be seen), the extent of destruction proved less important than the bacteriologic activity, in predicting response to treatment.

Conscientious ureteral calibration is necessary if ureteral strictures are to be avoided. Although intravenous pyelography every six months during the first five years of treatment will indicate widening of the ureter as an evidence of stricture formation, the passage of a No. 6 Fr. ureteral catheter up and down the ureters every six months is both diagnostic and therapeutic at the same time and at an earlier stage. Tuberculous contractures of the bladder were seen in a surprising 7% of these patients, and whereas some responded to chemotherapy, combined with a stretching of the bladder by hydraulic dilatation, others required enlargement of the bladder by an addition of a patch of intestinal wall. This could only be done when the ureterovesical valve had not been destroyed, so that there was no reflux to the kidneys.

It was apparent that the majority of relapses would occur within two years after the chemotherapeutic treatment and that almost all the additional relapses would occur before five years of follow-up study, and no additional relapses have ocurred after eight years of diligent follow-up observation in the eighteen years of experience of this research unit.

It was of interest that the children of these patients, who were exposed only to the tuberculous urine of their parents, had positive skin tests in 22%, as compared with traditional control-group rates of 4% to 10%.[6] Thus, the necessity for placing patients suspected of having active urinary tuberculosis on precautions is emphasized. This practice is not widely followed at the present time.

Instrument Sterilization

Cold sterilization of cystoscopes, as traditionally done, is woefully inadequate, according to the findings of this group. Oxycyanide of mercury, for example, either in 1:1000 or even 1:100 concentrations, quarternary ammonium compounds (widely sold for sterilizing cystoscopes), and newer iodine compounds, as well as vapor cabinets, were all found inadequate for sterilizing cystoscopes within one hour. Ten per cent formalin solution, used for fifteen minutes on a clean cystoscope, with all stopcocks open, proved to be eminently successful for killing all conventional organisms, including Mycobacterium tuberculosis.[7-9] The principal drawback was its capacity for irritating the skin of some of the personnel. It was necessary to wash it off in one of the more conventional fluids, in which the cystoscopes were then stored before use.

Incidence

The incidence of renal tuberculosis has at last shown some trend towards a decrease, for the last two years, after remaining remarkably constant at this research unit over the past twelve years, despite the advent and wide utilization of effective chemotherapy, including isoniazid, beginning about that time. Whether this reflects a vast reservoir of old cases or the fact that our unit is located in New York City, where there is a higher percentage of immigrants, or whether there will be an eventual drop-off in the numbers, remains to be seen. The clinical impression of many urologists that they are seeing less renal tuberculosis may only reflect the fact that they are being cured medically rather than coming to nephrectomy. It is a fact that even before the actual numbers of new cases decreased, the numbers of far advanced cavitary cases had decreased decidedly, the new cases consisting of moderately advanced (but distinctly cavitary) cases.[10]

The insidious nature of this disease can be judged by the fact that among the patients of this research unit, there were 25 physicians, 72% of whom showed advanced cavitary tuberculosis of the kidneys, a state of destruction that was achieved with so little disturbance to the patient that it did not lead to early diagnostic measures even in this more aware and knowledgeable group of patients. It has certainly been true that the disease had reached devastating proportions in both kidneys in many of these patients before it caused very much in the way of symptoms.[11] Many of the lesions were detected because pus cells were found in the urine at insurance examinations or because of the mildest backache, accompanied by slight pyuria.[12] The finding of ten pus cells per high-power field in a urine with a specific gravity of 1.015 is certainly compatible with renal tuberculosis, and it has been notable that among these patients, relapses were ordinarily accompanied by an increase in the number of pus cells.[13]

There has been recent widespread enthusiasm to adopt the utilization of the first-morning urine specimen instead of the twenty-four-hour urine accumulation for concentration and analysis for M. tuberculosis by culture and guinea-pig methods. To the best of my knowledge, this system has never been given adequate clinical trial on a comparative basis, where the two methods were used simultaneously on the same group of patients, at least in the United States. As far as can be determined, this attractive suggestion was made by Dr. Michael Kenney, as a result of nicely designed experiments in which artificially seeded specimens were used.[14] The advantages of smaller containers, quicker specimen collection and less opportunity for secondary contamination, in addition to Dr. Kenney's results, certainly argue strongly that this method might well be more practical than, and even superior to, the traditional twenty-four-hour urine collection. In a very small series of cases, the results have been found to be roughly parallel, but it will take a great many more cases before one can say whether there is any statistically significant difference between the two methods.

Although chromogenic acid-fast bacilli were recovered from the urine in 30 or 40 cases, there have been no well documented cases in which these organisms caused granulomatous renal disease, and most of the chromogens were thought to be contaminants.[15]

Antituberculosis treatment against genital tuberculosis is just as effective as against renal tuberculosis. It should be remembered that prostatic tuberculosis can be transmitted through the semen.[16]

Summary

Renal tuberculosis can be controlled by persistent, specific multiple-drug chemotherapy, based on drug-susceptibility information and abetted by adequate cystoscopic instrumentation to avoid stricturing. Triple-drug regimens used for a continuous period of two years are highly effective although the two-drug regimens may be equally effective if taken faithfully. Relapsing cases can be treated with different drugs, to which the organisms may still be susceptible. Excisional therapy is rarely, if ever, needed. Orally administered medications such as isoniazid, sodium PAS, ethambutol and cycloserine or ethionamide, as well as coverage with vitamin B_6, are usually adequate, even for retreatment, thus avoiding the unpleasantness and poor acceptability of injections with potentially toxic drugs such as streptomycin.

Patients with untreated urinary tuberculosis should be on precautions, and 10% formalin is the best agent for sterilizing cystoscopes contaminated with Mycobacterium tuberculosis. The incidence of urinary tuberculosis is not decreasing as rapidly as expected although the severity of the lesions does appear to be decreasing. The onset of the disease can be most insidious, as shown by the high incidence of advanced lesions among doctor patients.

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PERSONAL CREED

"Many times a day I realize how much my own outer and inner life is built upon the labors of my fellow men, both living and dead, and how earnestly I must exert myself in order to give in return as much as I have received. My peace of mind is often troubled by the depressing sense that I have borrowed too heavily from the work of other men."

Albert Einstein

LOCALIZATION OF URINARY TRACT INFECTION

• A proper epidemiologic and therapeutic approach to urinary tract infection requires accurate localization. Certain clinical, laboratory and instrumental tools assist in this procedure of localization.

William Brumfitt, M.D.

It has become apparent that localization of infection within the urinary tract has become increasingly important. When there is loin pain associated with tenderness and fever, there can be little doubt that infection of the renal parenchyma has occurred. In contrast with this situation, however, absence of typical symptoms and, indeed, total absence of symptoms, do not exclude the possibility of renal involvement.

Retrospective studies on children who have had urinary infection leave little doubt of the potential danger of this condition. In children it is well known that symptoms of urinary tract infection may be atypical, and there is frequently a delay in diagnosis. Reports from a number of centers make it apparent that delay in diagnosis of urinary tract and also of reflux, is associated with an increased incidence of scarring. Figure 1 shows the condition of the kidneys related to the age at the diagnosis of reflux.[1] It is evident that there is a much lower incidence of renal scarring in the younger age groups, whereas an increasing proportion of the older children with reflux have scarred kidneys. This probably reflects the longer exposure of the older child to this recurrent infection.

In this respect the work of Kunin, Deutscher and Paquin[2] is of great significance. They examined apparently normal schoolgirls between the ages of 5 and 19 years and showed that the prevalence of bacteriuria in girls was 1.2%. It should be stressed that this prevalence rate excluded children who had symptomatic infections and had therefore been treated before the survey was carried out. Most significant were the radiological findings of the asymptomatic children with bacteriuria because no fewer than 13.7% had caliectasis and 18.7%, reflux.

Before beginning a description of the methods for localization, it is necessary to stress that the urinary infection must be accurately diagnosed and that the sole criterion of urinary tract infection is the finding of significant bacteriuria. In our own experience it can be said that, with the exception of prostatitis, persistent infection within the urinary tract is almost always associated with a significant bacteriuria. It follows, therefore, that localization studies in the absence of significant bacteriuria are not worthwhile. To diagnose urinary infection the collection of an uncontaminated specimen of urine is essential. Both male and female patients must be given proper instructions together with the necessary materials to collect the specimen. Contamination is more likely to occur in the female, but satisfactory specimens can be obtained by the following procedure: the labia are separated and the vulva swabbed from front to back. With the labia still separated

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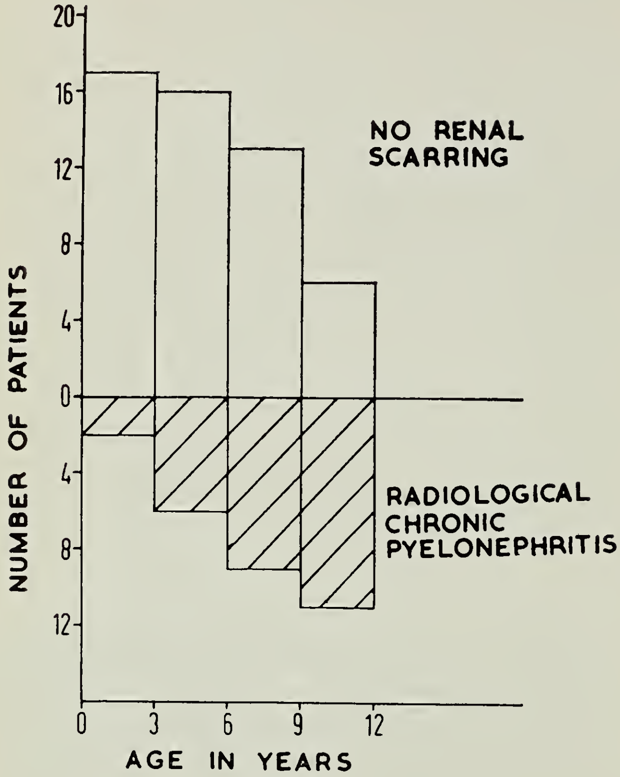

Figure 1

Results of I.V.P. in 80 children with reflux, relating the age at which reflux was diagnosed to the incidence of chronic pyelonephritis.

some urine is passed into the toilet, and then the disposable container provided is used to catch a midstream specimen. The urine should be sent to the laboratory within one hour or stored at 4°C; otherwise multiplication of a small number of bacteria present may invalidate the investigation. The diagnosis is made by quantitative counting, and the sole criterion of infection is a bacterial count of 10^5 or more. Whenever possible, all positive results should be confirmed by examination of a further urine specimen. The reason for this is that the confidence level of a single positive specimen is only 80%, whereas the finding of infection due to the same organism on a second occasion increases the confidence level to 95%. Within any population tested the vast majority of patients fall into those who are definitely not infected (that is to say, counts of 1,000 or less) or those who are definitely infected (that is to say, counts of 100,000 or more). Counts within the range of 10^4 and 10^5 are equivocal and must be repeated. On repetition it will be found that most of these counts will move either into the range of infection (more than 10^5) or no infection (less than 10^3). The methods available for rapid and economical screening of urine specimens have been reviewed.[3]

Table I

Methods Available for Localization of Infection in the Urinary Tract

Direct	Indirect
Urinary catheterization	Serum antibodies
Fairley technique	Urine concentration test
Renal biopsy	Urinary enzyme excretion
	Characteristics of urinary protein
	Prednisolone stimulation test

Varieties of Urinary Infection

It is very important to appreciate that in defined groups of patients with bacteriuria the localization of the infection varies considerably. Thus in bacteriuria in pregnancy the chance of renal involvement is much greater than in patients with urethral syndrome who complain of frequency and dysuria. Nevertheless whenever the urine is infected, asymptomatic pyelonephritis will be present in a significant proportion of patients.

In the male, chronic prostatitis has long been recognized as a refractory condition frequently defying curative therapy, and infection in this organ must always be considered as the cause of recurrent bladder bacteriuria in the adult male.

Localization of Infection

The methods available for localization of infection are summarized in Table I. Kidney infection can be diagnosed directly by sampling ureteric urine, but distinction between upper and lower urinary infection using this method depends upon being able to wash out the bladder adequately, as well as other fac-

TABLE II
LOCALIZATION OF URINARY TRACT INFECTION BY BLADDER WASH-OUT

	Unilateral Ureteric Infection		Bilateral Ureteric Infection		Bladder Infection	
CASE NUMBER:	12	15	22	23	2	10
SEROTYPE	075	04	06	012	075	06
BLADDER						
*Bacteria	$> 10^5$	$> 10^5$	$> 10^5$	$> 10^5$	$> 10^5$	$> 10^5$
**WBC	327	247	264	84	28	750
RIGHT URETER						
*Bacteria	$> 10^5$	10^3	$> 10^5$	$> 10^5$	0	0
**WBC	490	197	0	28	0	820
LEFT URETER						
*Bacteria	0	0	$> 10^5$	$> 10^5$	0	0
**WBC	0	0	184	34	0	0
ANTIBODY TITER	1/1280	1/1280	1/2560	1/2560	1/160	1/1280
I.V.P.	CPN (Rt)	CPN (Rt)	poly-cystic kidneys	bilateral CPN	normal	CPN (Rt)

*Bacteria per ml
**WBC per cu mm

tors. Quantitative counts should therefore be made on the bladder wash-out fluid and no ureteric urine count regarded as significant unless it exceeds the bladder wash-out count by a factor of 10. In fact, differences are usually much greater. Removing bacteria from the bladder by wash-out is often especially difficult in cases with bilateral infection where ureteric counts are high. In such patients reinfection of the bladder contents presumably occurs continuously from above. Examples of uni- and bilateral ureteric urinary infection are shown in Table II. As in the case of bladder infection, pyuria may or may not be found to accompany infection of the ureteric urine.

It is most important to appreciate that in the ureter, where there is a continuous flow system, bacterial counts very much less than 10^5 are highly significant (e.g., case 15, Table II). Where there are hydronephrosis and ureteric dilatation in association with ureteric infection, bacterial counts may be very high because hydronephrosis of the ureter reduces the velocity of urine flow.

Examples of infection confined to the bladder are also shown in Table II. It should be noted that white cells may come from the bladder in the absence of upper urinary tract infection and are therefore of no value in localization. The pyuria may persist for some time after eradication of infection from the ureter, and an example of this is shown in Case 10.

Neomycin Bladder Wash-out Test

We have used a modification of the test devised by Fairley[4] et al, the principle of which is shown in Figure 2. A Foley catheter is passed into the bladder and a specimen of bladder urine collected. The catheter is retained in position by inflating the balloon, and then 200 ml of neomycin solution at a strength of 0.1% is injected into the bladder and left in position for one hour. At the end of this time the bladder is washed out by 2 liters of water. A specimen of the wash-out fluid is collected to make sure that a bactericidal concentration of neomycin does not remain and that the bacteriuria has been eliminated. If urine specimens are then collected at ten minute intervals under conditions of mild diuresis, it is obvious that this urine will represent that being passed directly from the ureters. In this way, ureteric urine can be collected without the need to pass ureteric catheters. Some results of the neomycin bladder wash-out are shown in Table III. In the first example infection and pyuria are confined entirely to the bladder, whereas, in the second example,

TABLE III
LOCALIZATION OF URINARY TRACT INFECTION BY NEOMYCIN BLADDER WASH-OUT

		Bacterial count (per ml)		White cell count (per ml)	
		Case 1	Case 2	Case 1	Case 2
BLADDER URINE		$>10^5$	$>10^5$	27	1,155
WASHOUT FLUID		0	0	0	0
URETERIC URINE	10 MIN.	0	4×10^3	0	30
	20 MIN.	0	40×10^3	0	37
	30 MIN.	0	81×10^3	0	68
OSMOLALITY (m osmoles/kg H_2O)					
	SERUM	855 883	697 772		
	URINE	286	288		
SERUM ANTIBODY TITER		1/160	1/1280		

TABLE IV

CORRELATION OF REFLUX AND ANTIBODY TITER IN CHILDREN

	Number of Children	Reciprocal of Antibody Titer >320	<320
REFLUX	11	10	1
NO REFLUX	24	6	18
TOTAL	35	16	19

$X^2 = 10.68$: $p < 0.001$

TABLE V

LEUCOCYTE EXCRETION IN NORMAL SUBJECTS

		Upper limit	Mean
Addis	(1926)	152,917	26,875
Rolfe	(1953)	206,600	28,200
Houghton and Pears	(1957)	196,000	87,700
Little	(1962)	109,000	24,930

where there is infection of the ureteric urine, bacteria rapidly reappear in the ten-minute collection specimens and there is a progressive rise in the bacterial count.

Indirect Techniques

It would, of course, be very useful to have a technique which would need only collection of specimens of urine and blood from the patient. We have developed such a technique based on the measurement of serum antibody against the organism causing the urinary infection.[5,6] It was found, by comparison with ureteric catheterization and obtaining kidney tissue from patients who had a partial nephrectomy, that when infection involved the kidney, the antibody titer exceeded a particular level. In contrast, when patients had no involvement of the renal parenchyma, the antibody titer was normal. This immunological method may be a better index of actual kidney tissue since involvement of the ureteric and pelvic urine does not necessarily mean renal parenchymal involvement. Figure 3 shows the result of the antibody titer test in patients with classical acute pyelonephritis where there was no doubt that the renal involvement had occurred. Serum samples were taken at intervals, and the highest titer was recorded. The results are shown by the open columns. The controls were patients who gave no history of urinary infection and whose urine was not infected at the time of examination. In the control patients no organism was available, and it was therefore necessary to test their serum against twelve of the most common O serotypes responsibile for urinary

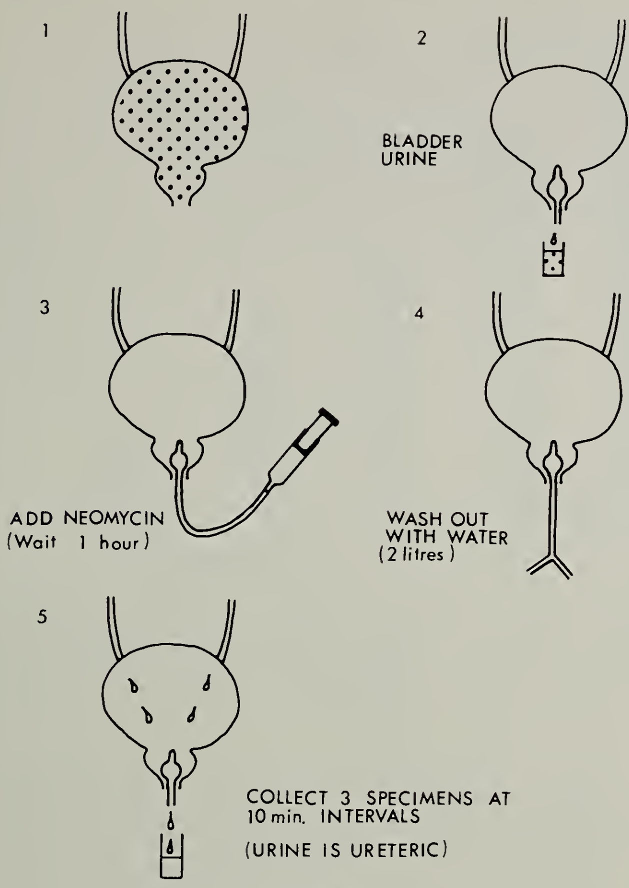

Figure 2

Fairley technique for localization of infection.

1. Bladder contains infected urine ($>10^5$ organisms per ml). The patient is told to empty the bladder completely and an M.S.U. is collected.
2. A Foley catheter is inserted and residual bladder urine collected and measured.
3. 50 ml. 0.1% neomycin sulphate solution is introduced into the bladder and left for 1 hour.
4. The bladder is repeatedly washed out with sterile water, using at least 2 litres. The bladder is then completely emptied and the last washing saved to test for residual neomycin.
5. Specimens of urine are collected at 10 minute intervals for at least 30 minutes.

infection, and to record the highest result. It can be seen that patients with renal involvement have high antibody titer whereas those without infection tested against the common O serotypes rarely exceed a titer of 1/160 and never 1/320. The method is a direct agglutination technique and is within the capacity of any properly equipped microbiological department. Thus, by estimating the titer it is possible to decide whether infection is confined to the bladder or involves kidney tissue (it must be remembered that in the male, prostatic involvement will also give a raised antibody titer even though no renal involvement is present). Serial readings can be of considerable help in confirming elimination of tissue infection. In patients with acute pyelonephritis a rise in titer occurs despite effective treatment, but following eradication of infection the titer falls to normal. In sharp contrast, patients with a persistent infection due to the same organism which resists eradication have a persistently raised antibody titer, as seen in Figure 4. In such cases where the infection is asymptomatic or not of abrupt onset, the titer is frequently raised when the patient is first seen and remains elevated. The dotted line (Figure 4) shows a case where infection was eradicated after an interval, and only then did the antibody titer fall. In children the test has been valuable, and Table IV shows the results of an investigation carried on in collaboration with Dr. Jean Smellie. It can be seen that where reflux is present, the antibody titer is almost invariably raised, whereas, if there is no reflux, the antibody titer is frequently not raised. Of course, the absence of reflux at any particular time does not eliminate the possibility of renal involvement. Nevertheless, the difference in antibody titer where reflux is present and where it is absent is significant.

TABLE VI

EFFECT OF RENAL INVOLVEMENT ON THE RESULTS OF TREATMENT

	Serum antibody titer	
Bacteriuria in Pregnancy	Normal	Raised
No. treated	104	36
Cured	78 (75%)	20 (56%)
Frequency-dysuria syndrome		
No. treated	79	33
Cured	71 (90%)	19 (58%)

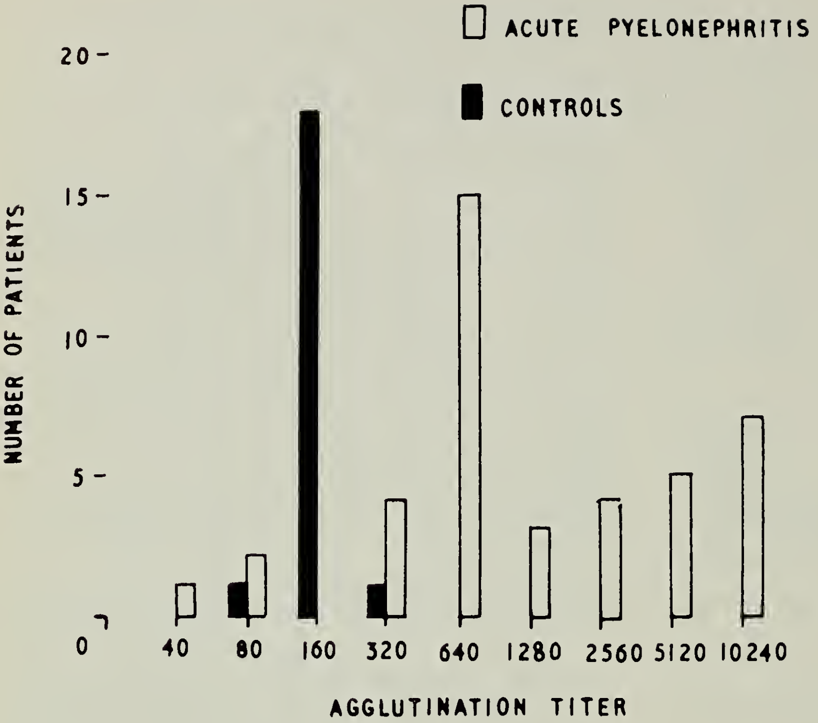

Figure 3

Comparison of serum antibody titer in 20 control patients and 41 patients with acute pyelonephritis.

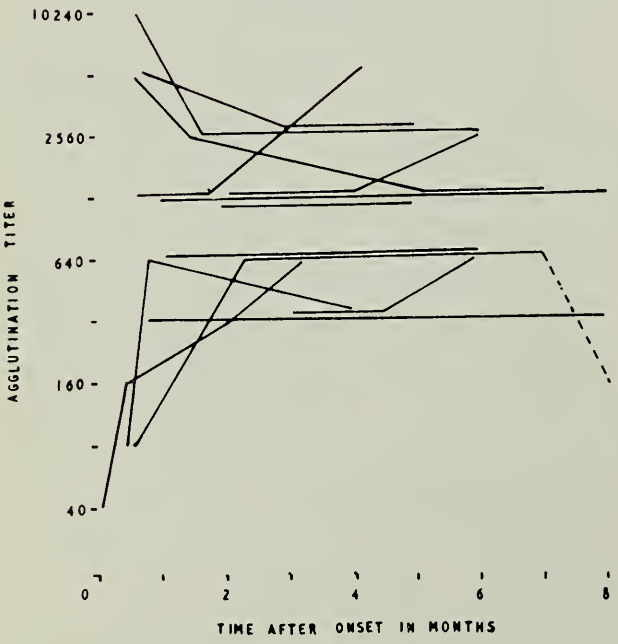

Figure 4

Persistence of high antibody titer in patients whose infections failed to respond to treatment. (Broken line indicates a fall in titer when therapy was ultimately successful.)

Urine Osmolality

Another test which enables distinction to be made between renal involvement and no renal involvement is estimation of the urine osmolality by means of osmometry. To carry out the test the patient was instructed to take no fluid from 12 noon but to eat a normal dry diet. The bladder was emptied at bedtime and the urine specimens collected the next day on waking and at 9 a.m. The urine osmolality was determined by depression to freezing point in a universal osmometer.

Ninety-six pregnant women were studied, and, of these, 63 had been shown to have significant bacteriuria on two successive occasions, while 33 were non-bacteriuric controls. Both groups studied were under identical conditions. The results are shown in Figure 5 where it can be seen that only one non-bacteriuric patient had a urinary osmolality below 750 milliosmoles/kg H_2O while in 32 (97%) the osmolality exceeded this value. In contrast, of the 63 bacteriuric women 19 (30%) showed values of less than 750 milli-

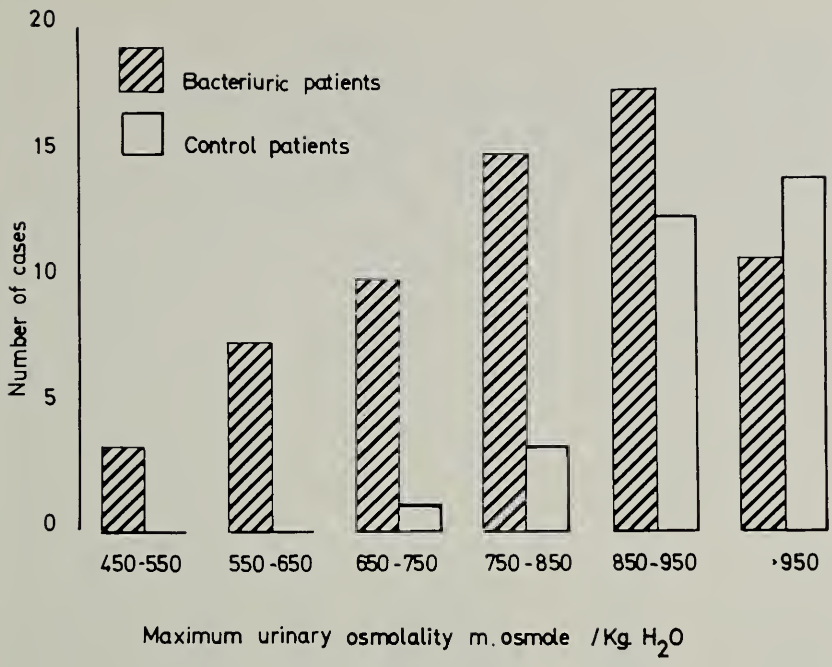

Figure 5

Results of urine concentration tests in pregnant bacteriuric patients and non-bacteriuric controls.

osmoles/kg H_2O. Thus the proportion of patients with bacteriuria in pregnancy who have renal involvement, as judged by impaired urine concentrating ability (30%), is similar to that found in pregnant women studied by Brumfitt and Percival[7] using the antibody technique (32%). The patients studied on both occasions were drawn from the same community and can, therefore, be regarded as being similar in many respects, including socio-economic status. Clearly the defective osmolality is not necessarily associated with chronic organic renal disease because, following successful treatment of the infection, we have observed the osmolality to return to normal.

Leucocyte Counts

We place great importance on the leucocyte counts, but they are no substitute for the tests mentioned in bacterial localization. The major difficulty is summarized in Table V where it is shown that there is a big variation between mean leucocyte excretion and the upper limit of leucocyte excretion. Furthermore, there is no method of determining the origin of leucocytes because techniques such as testing for the presence of "glitter cells" and the use of special stains have not proved to be effective in deciding whether the white cells originate from the bladder or from the upper urinary tract.

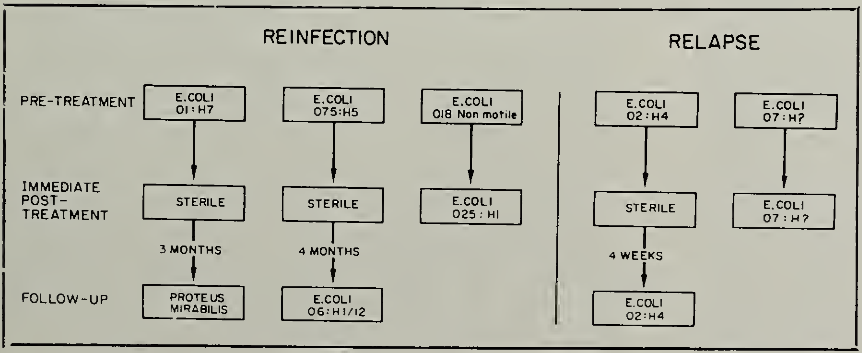

Figure 6

Infecting organisms isolated before and after treatment showing examples of reinfection and relapse. In the case of **E. coli** distinction can only be made by serotyping.

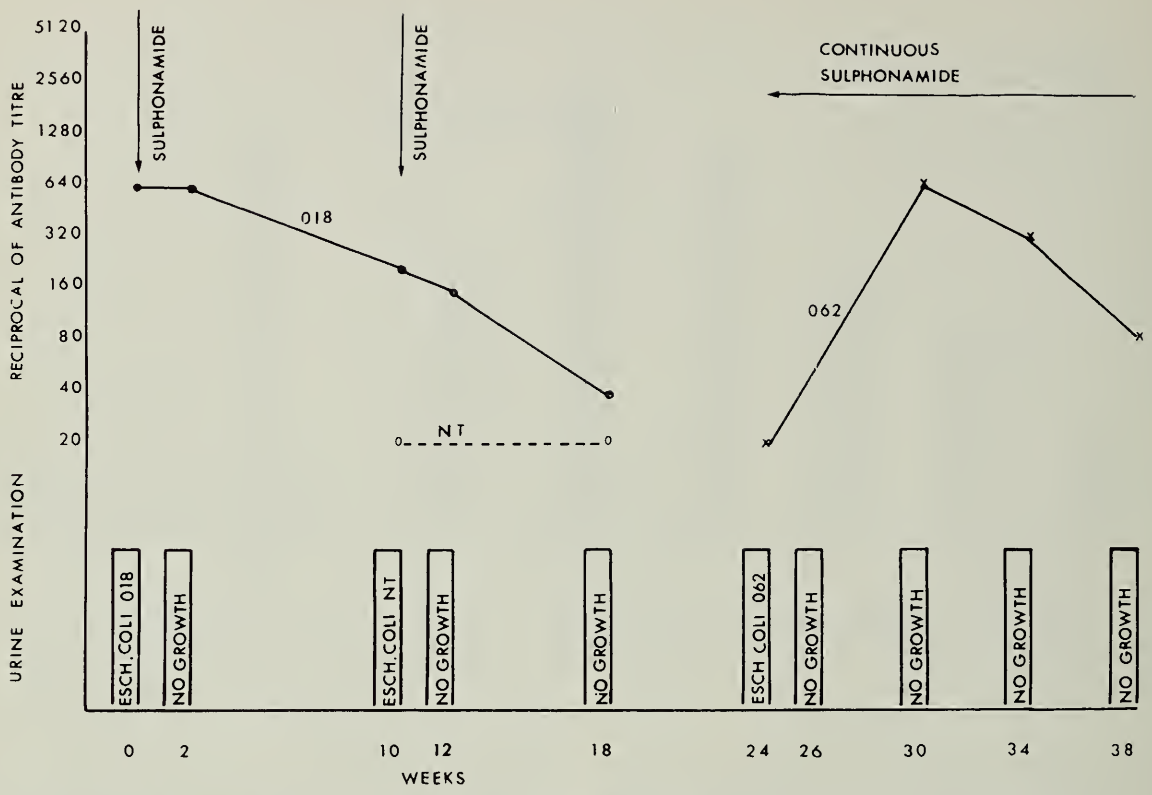

Figure 7 — Episodes of reinfection in a 14-year-old girl with a chronic renal lesion.

Other Methods

The other methods of localizing urinary infection, as listed in Table I, have not so far proved to be of practical value. The characteristics of urinary protein, urinary enzyme excretion and the prednisolone stimulation test are not, at the present time, widely used for purposes of localization.

Serotyping of E. Coli

If localization is to be used as a guide in the planning of treatment, serotyping of *E. coli* causing the infection is also important. *E. coli* is responsible for most domiciliary and so-called "spontaneous" urinary infections. If the urine becomes sterile after treatment, but later becomes infected by different organisms, such as *Proteus mirabilis* (Figure 6), reinfection by a new organism has obviously occurred. However, if the organism is still *E. coli*, it is impossible to know whether the same strain has persisted and relapse occurred, or whether the urine has become reinfected from outside the urinary tract. Serotyping of the *E. coli* allows this distinction to be made. (Figure 6) A change in serotype group means reinfection, while the finding of the same serotype usually indicates relapse. It can be seen that both reinfection or relapse can be found immediately after treatment or during follow-up. However, in our experience relapse usually occurs in the six weeks following treatment,[8] and episodes after this interval are more likely to be due to reinfection. An example of reinfection is given below. (Figure 7)

A fourteen-year-old girl investigated for enuresis, was found to have an infection due to *E. coli* O 18, and a raised serum antibody titer indicated renal involvement. Treatment with sulfadimidine eradicated the infection, and the antibody titer subsequently fell to normal levels. There was a previous history of urinary infection, and radiology showed blunting of the right upper calyx, but no reflux was demonstrated. At ten weeks the

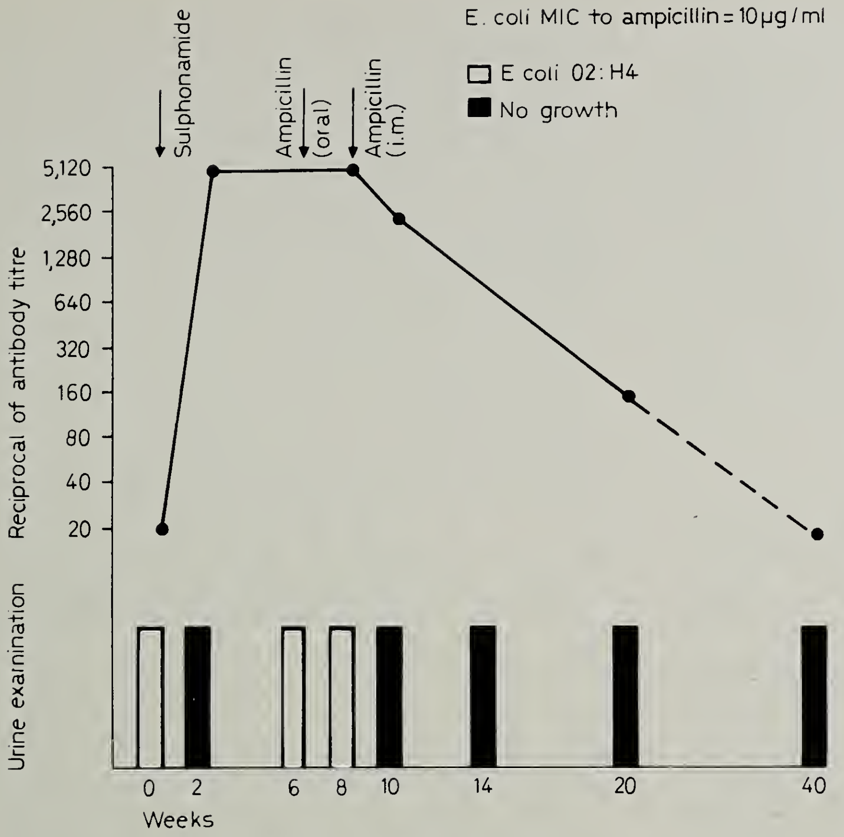

Figure 8

Relapse of infection in a 12-year-old girl with renal involvement but without radiological abnormality.

patient was asymptomatic, but the urine was found to be infected by a different strain of *E. coli* which could not be typed. The serum antibody against this organism was not increased. The infection again responded to sulfonamide, and six weeks later the urine was still uninfected. However, soon afterwards symptoms of lower urinary infection appeared, and *E. coli* O 62 was isolated from the urine. The raised antibody titer indicated that renal involvement had again occurred.

In view of the recurrent infection, evidence of renal involvement, and the presence of a chronic renal lesion, a course of sulfonamide was given and then continued in smaller doses. At the last examination the urine was uninfected and the antibody titer had fallen to normal.

This is an example not of failed chemotherapy but of the increased susceptibility to infection. Each episode of infection was eradicated, but reinfection by another strain of *E. coli* soon occurred.

Failure of therapy can be said to have occurred when the same organism reappears following treatment. This is illustrated by the following case. (Figure 8)

A girl aged twelve years, who had suffered from malaise and low grade fever, suddenly developed loin pain and fever of 101.6°. The urine was infected by *E. coli* O2: H4, and the subsequent rise of specific antibody indicated renal involvement. The patient was treated with sulfonamide, and the symptoms quickly disappeared. At follow-up the urine was sterile, but at six weeks an asymptomatic infection due to *E. coli* O2: H4 (the strain which caused the original infection) was found. This failed to respond to oral ampicillin at a dose of 500 mg 6 hourly. The reason for this failure is indicated in Figure 9, where it is seen that such therapy rarely gives serum levels (and possibly therefore tissue levels) which are adequate to eradicate certain infections involving the renal parenchyma. In contrast, intramuscular injection

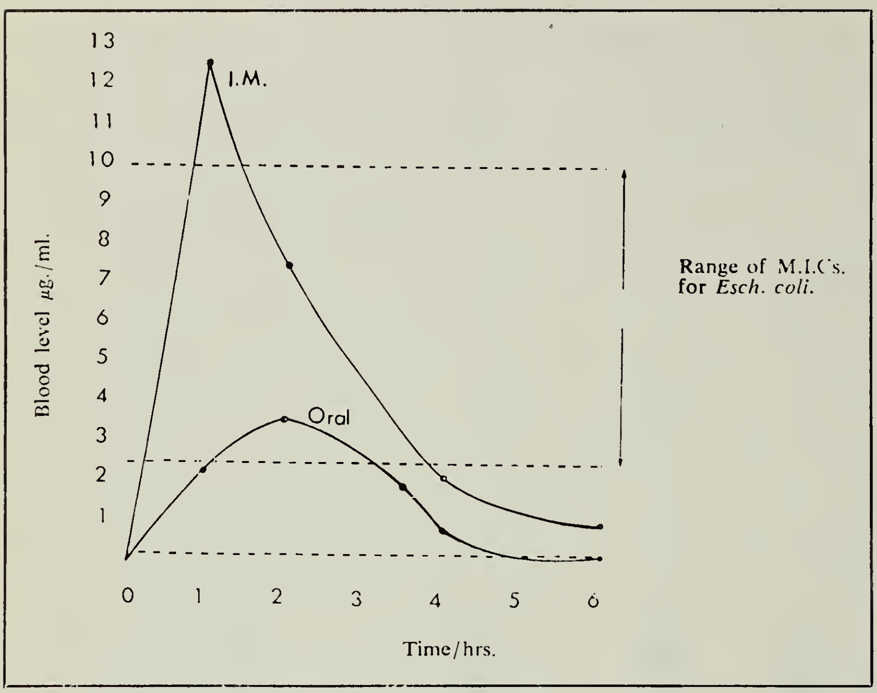

Figure 9

Blood levels of ampicillin obtained after administration of 500 mg by oral and intramuscular routes. The relationship of these levels to the range of M.I.C.s for "sensitive" E. coli is shown.

gives a much higher serum level. (Figure 9) The patient was therefore admitted to hospital and given a five-day course of intramuscular ampicillin, in order to obtain better blood levels — and presumably tissue levels. The urine became and remained sterile and the antibody titer fell to normal, reassuring us that the tissue involvement had been eradicated. Radiology of the urinary tract showed no abnormality. The patient has not been given prophylactic therapy, and the four year follow-up has shown no further episode of infection.

These examples indicate the great importance of not only determining the localization of the infection, but also of determining whether failure of treatment is due to failure of eradication or reinfection.

The Importance of Renal Involvement

In Table VI there is a substantial difference shown in the cure rate in asymptomatic bacteriuria in pregnancy, where the cure rate with conventional oral therapy is only 75%, and in the frequency-dysuria syndrome, common in women of childbearing age, where the cure rate is 90%. However, once renal involvement occurs, the cure rate is both lower and similar in the two groups.

Studies in Bacteriuria of Pregnancy

It is interesting to note that the localization of infection can be judged by follow-up studies of patients who have had a simple course of oral treatment. Our experience in 285 patients treated with sulfonamide shows that 74% responded and 26% failed. It is evident that treatment greatly decreases the risk of pyelonephritis in pregnancy, which can be reduced to very small levels if the treatment has been effective. Furthermore, the number of patients with bacteriuria who develop acute pyelonephritis, which is a serious complication of pregnancy, hazardous to mother and fetus, is approximately 25% in the untreated group, but, with treatment, the incidence can be reduced to between approximately 1.5% to 3%. Long term follow-up on patients who have had bacteriuria is also important. By the simple test of whether patients succeeded or failed to respond to sulfonamide, they can be divided into two different groups. The percentage with bacteriuria at follow-up, two to four years after the initial diagnosis, was 46% (22/48) in those who failed to respond to therapy but 19% (21/109) in those who responded. It should also be noted that the prevalence of infection in both groups is higher than that found in an un-selected population of women of childbearing age where the prevalence is approximately 7%. This indicates that a substantial number of women in both groups are more susceptible to either continuous or recurrent urinary infection, so that long term follow-up of patients with bacteriuria in pregnancy is desirable. Radiology of patients with bacteriuria also shows that the same simple test of failing to respond to sulfonamide again divides patients very sharply into two groups. The failure group had abnormalities more frequently than the responding group, and the lesions tended to be more severe, 10 of the 11 patients with chronic pyelonephritis belonging to the group failing to respond.

Finally, in localizing infections the importance of the urological surgeon should not be ignored, for lesions within the bladder, such as a diverticulum, may well cause persistent or recurrent infections. In a non-draining diverticulum, bacteria reach a climax population (more than 10^9 per ml), and such populations are resistant to antimicrobial agents. Thus, the bladder urine can be easily sterilized by chemotherapy, but reinfection from urine within the diverticulum occurs each time chemotherapy is withdrawn.

In the male, recurrent infections always require detailed investigation to discover the reason, and lesions such as infection of the prostate and surgical lesions of the bladder must be borne in mind.

It is concluded, therefore, that although accurate diagnosis of urinary infection is still the keystone of treatment, it is also important to make an effort to localize infection, and it must be appreciated that symptoms alone are an inaccurate guide to the site of infection within the urinary tract.

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SOME ACARALOGIC LORE

The army-worm moth and other moths of its type have very acute hearing, hearing which operates in the ultrasonic range. This hearing enables them to escape from bats who also have very acute hearing and who eat army-worm moths if they can be caught.

Mites are the study province of the acaralogists, professional mite studiers. An acaralogist recently reported the interesting observation that the ear mite of the army-worm moth occupies only one of its host's ears at any time. Even if the mite population becomes crowded by other mites and their eggs (as many as 50 mites may live in one ear of one moth), the mites will not move over to the other ear. Presumably, although mite and very small, it has marvelous knowledge that if it invades both ears, the hearing of the moth may be compromised. If the moth hears poorly, the bat may catch it. If the bat catches the moth and eats it, it eats all the ear mites too.

A mighty important concept to have been developed by a mite, we think even non-acaralogists will agree.

PROPER URINE CULTURE TECHNIQUES IN INFANTS AND CHILDREN

• The diagnosis of urinary tract infection requires reliable and reproducible urine culture techniques. In the infant and small child, suprapubic bladder aspiration affords the best method for obtaining the urine specimen.

DAVID R. LINES, M.D.

Among the methods suggested for collecting urine for culture from infants and children are urethral catheterization, suprapubic aspiration and bag collection from either a grossly clean or surgically clean perineum. I propose to discuss these four methods of collection and the methods of examining the urine so collected to determine the presence of infection.

Firstly, let me point out the importance of detecting such infections early. Urinary infection is a significant cause of morbidity and mortality in childhood. Autopsy studies in childhood reveal an incidence of 1.6 to 2.0% of pyelonephritis.[1,2] In male children the age at which one is most likely to find a urinary infection is less than one month.

Secondly, let us consider the methods by which one may collect urine and their various virtues and disadvantages. As the young child or infant cannot void on demand, the practical policy to obtain naturally voided urine is to apply a bag to the perineum. This is usually done after careful surgical clean-up, usually using a combination of PhisoHex and Zephiran. Using such clean-up procedures in adult women where one has the advantage of obtaining a midstream specimen, up to 20% of urines have colony counts in the doubtful range.[3] One would presume that the application of a bag, which means the first few milliliters of urine are included, would lead to a higher rate of doubtful positives. The published figures comparing bag collection after surgical clean-up with either catheter collection or suprapubic aspiration in childhood show a contamination rate of 12 to 64%[4,5] with an increasing problem with younger age. This degree of uncertainty decreases with repeated samples, but repeated samples are not always possible in office practice.

Nor is the surgical clean-up procedure easily accomplished in a busy office practice, and it was this that prompted Dr. Randolph[6] to try the application of the bag to a grossly clean perineum. He found a contamination rate of only 3.5% using 10,000 colonies as a presumptive positive; this fell to 1½% with 100,000 colonies as the criterion. One possible criticism of this surprising result was that he checked his presumptive positives only against another bag count with surgical clean-up. However, if one presumes all of his positive cultures greater than 10,000 would have been proven not to be urinary infection by other means, his contamination rate would have been only 8%. Why did he find such a low rate of contamination? Does careful perineal clean-up actually increase the chance of contamination? The most likely reason I believe lies in the fact that he removed the bag and placed it in a refrigerator himself. This emphasizes the point that, no matter how careful the collection, immediate culture or refrigeration is necessary.

I would like to emphasize that in comparing contamination rates in naturally voided urines all investigators should compare their results with urine obtained either by urethral catheter or suprapubic aspiration which invariably shows lesser rates of infection and

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therefore, one presumes less likely to be contaminated.

The difficulties of catheterization especially in infants are known to you all and the dangers to most. The introduction of pathogenic bacteria can be reduced to a minimum as shown by Dr. Pryles' group in 1959.[7] However, in that study the catheterization was performed under anesthesia. In the conscious and therefore struggling child, the chance of infection rises remarkably.[8,9] In Dr. Pryles' study, sterile urine was obtained in 95.3% of cases who had suprapubic tap, while catheter urine was sterile in 59.5% when first few milliliters were examined and in 80.5% of cases if the second few milliliters were examined. All of the patients were considered to be free of infection, so here we have positive cultures in the face of these careful collection methods. If, however, one combines these methods of collection with colony count using 1000 colonies/ml as indicative of infection, one finds no positives with suprapubic aspiration and one case (2.5%) positive (presumably falsely so) in children older than three months who are anesthetized and catheterized after careful clean-up. I think it is a fair assumption that the contamination rate will rise when catheter collection is attempted in the conscious child. Thus when colony counting is used as the method of detection of infection, suprapubic aspiration or catheterization is much more accurate than bag collection.

Can we look at urine in any other way so that contamination is not a problem? The time-honored method of looking for pyuria is worthy of consideration.

Using 10 leucocytes/ml of urine (which approximates three pus cells/hpf) as a cut-off point, Mabeck[10] in Denmark was able to find pyuria in 95% of adult women with urinary tract infection. In children the rate of pyuria in urinary infections drops to 61%.[11] Thus if the detection of urinary infection relies on pyuria, it is likely more than one quarter of the children with infection will be missed. Perhaps more important is the fact that pyuria can have other causes than infection. In a review of the literature, the incidence of pyuria in urines examined is 17.8%[12] whereas the incidence of significant bacteruria is considered to be 5% or less.[13-15]

Chamber counting so that the pyuria is expressed as cells per milliliter is more accurate than counting cells/hpf, but a false positive rate three times as high as the true positive rate makes either method a screening test, and not a good screening test, in children where a quarter of the negatives are also false.

Leucocyte excretion rates further increase the accuracy of pyuria as an indicator of infection but are impossible to time and difficult to collect in uncooperative children.[10]

Gram staining of undiluted urine[16] and gram staining of the spun deposit[11] both show good correlation with bacterial counts, but neither is any better at ruling out contamination than colony count and both are less accurate.

The TTC and similar chemical tests for bacteriuria are again useful screening tests for pathogens with the exception of *Klebsiella,* which often does not register as a positive when it is the cause of infection. It does have the advantage of being able to be done by the person collecting the urine, but so does a colony count. In fact any person collecting a urine can easily plate out a loop full of urine far more easily than he can gram stain or perform these chemical tests.

Other chemical tests, such as protein or blood in the urine, are positive in some urinary infections but are so variable as to be useless in helping one make a decision.[7] In fact one may as well look at a freshly voided urine and say, "If it is clear, it is unlikely to be infected; if cloudy, it may or may not be."

Thus we arrive at the conclusion that colony counting is the most reliable method of detecting urinary infection at our disposal. In turn the accuracy of colony counts depends on the method of collection. That suprapubic tap is the method that obtains least false positives is shown by numerous papers.[5,6,8]

Then why are we not using this method of collection? The objections are: 1. it is painful; 2. it is dangerous; 3. it may not obtain urine; 4. parents will consider it barbaric.

1. It does entail a certain amount of discomfort. That this is minimal is shown by Stamey's[18] ability to perform the aspiration in 2,500 adults, who reported that the passage of needle through the abdominal muscles was less painful than the subcutaneous local anesthesia. Thus without local anesthesia the procedure involves the same pain as an intramuscular injection, a mode of treatment likely to be chosen for the false positive urine infection. In fact it is probably less painful than the results of an ill-chosen clean-up fluid applied to the genitalia; alcohol-containing solutions are frequently used by inexperienced personnel.

2. Weathers and Wenzel[19] report three cases of perforation of organs other than bladder and allude to two others. In no case was any ill effect noted, and they concluded that in the child with a grossly distended abdomen, aspiration of urine is contraindicated. It is noteworthy that in the hospital where this occurred such bladder taps continue to be performed at a rate of about 40 per month. Although there may be other personal experience, no one else has felt compelled to report any complication of the procedure.

3. Failure to obtain urine can be avoided by ensuring that the bladder is palpable or percussable before aspiration. The full or partially full bladder is easily detected in the young child. If the bladder is not detected, one should wait (usually less than half an hour is necessary). This is not an indication for immediate bag collection because the child who has an empty bladder is unlikely to void spontaneously within half an hour.[6]

4. Parents will not consider suprapubic aspiration barbaric when educated regarding the procedure. It did not take much to convince patients that the dangers and discomfort of a penicillin injection were worthwhile. It should not take much to convince them that the bladder tap, which is less dangerous than any form of medication that one might incorrectly prescribe on the basis of any other collection, is worthwhile.

In conclusion, in the uncooperative child we know the most reliable method of urine collection, easier and faster than any other, is suprapubic aspiration.

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CLINICAL RESEARCH

The very pursuit of research . . . provided that it is relevant, has merit in its own right in creating an atmosphere of intelligent inquiry; but in medicine the practicing physician who is intensely interested in the diagnosis and treatment of the individual patient and responds to the challenge which every fresh patient brings has his own constant stimulus to intellectual inquiry and need not be ashamed if he finds the added burden of organized scientific research something of a distraction.

Lord Platt, Brit Med J 4:441, 1967.

OXOLINIC ACID THERAPY OF RECURRENT URINARY TRACT INFECTIONS

• **Oxolinic acid, a quinoline derivative, eradicated infection in a high percentage of patients with recurrent urinary tract infection. The incidence of side effects was high.**

Clair E. Cox, M.D.

Oxolinic acid, an organic acid, is the second of two quinoline derivatives which exhibit antibacterial and pharmacologic[1-4] properties consistent with those required for agents used in the therapy of urinary infections. The first of these two organic acids, nalidixic acid, was shown to be effective in the treatment of urinary tract infections.[5-7] On the other hand, as experience with the drug accumulated, it has been suggested that the usefulness of nalidixic acid may, to some extent, be limited by its tendency to rapidly evoke bacterial resistance,[6,7] the not uncommon occurrence of gram-positive superinfection during nalidixic acid therapy,[5] and the relatively high incidence of side effects which occur with nalidixic acid administration.

Clinical experience with oxolinic acid is limited; however, two reports have indicated that it is effective for urinary-tract infections.[7,8] It is suggested by one of these studies[7] that oxolinic acid is less prone than nalidixic acid to "evoke highly resistant mutant bacteria." Oxolinic acid is known to be more potent on a weight basis[1,7] than nalidixic acid and therefore, a smaller dose of medication is theoretically required for similar infectious processes. This paper describes our experience with oxolinic acid in the treatment of 67 patients with recurrent urinary tract infections.

METHODS

Laboratory Studies

All bacterial isolates were identified by standard procedures and tested by the single disc technique[9] to oxolinic acid discs of the following concentrations: 0.5 mcg, 1.0 mcg, 2.0 mcg and 5.0 mcg. The minimal inhibitory concentration (MIC) and minimal bactericidal concentration (MBC) of each clinical isolate were determined by a tube dilution technique as previously described.[10] A standardized inoculum of approximately 10^5 organisms was used. Final concentrations of oxolinic acid were 25, 12.5, 6.25, 3.12, 1.56, 0.78, and 0.39 mcg/ml.

Serologic grouping for the determination of the somatic (0) antigen was performed on all *E. coli* isolates.

Clinical Studies

Sixty-seven outpatients, attending the private urological clinic of the Bowman Gray School of Medicine, were placed into a study to evaluate the efficacy of oxolinic acid in the therapy of urinary infection. Each patient had a urinary tract infection at the time of initial treatment with oxolinic acid as indicated by a pretreatment urine culture demonstrating 10^5 or greater bacteria per ml of urine. All but three of these 67 patients had a history (usually confirmed by our records) of recurrent episodes of urinary infection. Forty-three of the patients were female and 24 male. The age range was 16 to 65 with a mean age of 44.

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Supported-in-part by the Warner-Lambert Research Institute, Morris Plains, N. J.

OXOLINIC ACID #1
RESULTS
M.I.C.

		Cumulative % isolates sensitive µg./ml. oxolinic acid					
	No. Isolates	$\bar{<}$ 0.39	0.78	1.56	3.1	6.25	12.5
E. coli	42 (42)*	60	79	95			
P. mirabilis	25 (7)	56	73	92			
Indole pos proteus	25 (2)	51	71	89			
Coliforms	25 (2)	53	68	91			
Kleb.-aerobacter	25 (7)	31	47	64	81	93	
Pseudomonas	10 (0)						20

* figures in ( ) indicate isolates from study patients

TABLE 1: Cumulative percent of 142 urinary pathogens sensitive to increasing concentrations of oxolinic acid.

At the time of therapy with oxolinic acid 41 patients were diagnosed as having cystitis, 18 prostatitis, and eight pyelonephritis. Prior infections of the urinary tract had occurred on an average of between five and six times in these 67 patients.

Oxolinic acid was administered in a dose of 750 mg twice daily for 28 days. In the event that side effects occurred, the dosage was to be reduced to 500 mg twice daily. Prior to and immediately following treatment a complete blood count, urinalysis, BUN, and SGOT were performed on all patients. Urinalyses, urine cultures, and patient evaluations were carried out on the seventh, fourteenth, and final therapy day; and, in addition, the same studies were performed after completion of therapy at monthly intervals for three months.

Results

Laboratory Studies

Table 1 shows the cumulative percent of 152 urinary pathogens susceptible to increasing concentrations of oxolinic acid determined by the tube dilution technique in broth. It should be noted that 60 of these gram-negative organisms were obtained from the study patients and the remaining 92 from additional patients with urinary infections. With the exception of *Klebsiella-enterobacter* isolates, 89 to 95% of the Enterobacteriaceae were inhibited by 1.56 mcg/ml or less of oxolinic acid. Although *Klebsiella-enterobacter* strains were less susceptible, 93% were inhibited by 6.25 mcg/ml, an amount of oxolinic acid well below urinary concentrations of the drug and a level of drug which can be attained in the serum.[11] *Pseudomonas* strains were uniformly resistant to oxolinic acid. When compared to similar tube dilution studies with nalidixic acid, by us[5] and others,[6] it is clear that oxolinic and nalidixic acid have a similar spectrum of activity, but it is equally evident that oxolinic acid is more potent on a weight basis.

The zone of inhibition about discs containing 0.5 mcg, 1.0 mcg, 2.0 mcg, and 5.0 mcg was measured for the isolates recovered from the study patients and compared with the MIC as measured by tube dilution. These results are shown in Figure 1. Separation into resistant and sensitive populations and consistency between disc zones and MIC's were best achieved with the 2 and 5 mcg discs. This is especially true if the staphylococcal isolates are removed.

Minimal bactericidal concentrations, although not illustrated here, were most com-

OXOLINIC ACID #1
BACTERIOLOGIC RESULTS

	No. Patients	Therapy 1-49 days*			Patients at risk	Recurrence	
		Eradicated	Persistent	Superinfection		0-28 days	28-84 days
E. coli	41	37	3	1	37	3 (1)**	7 (1)
Klebsiella-aerobacter	7	5	2	0	5	1 (1)	2
Proteus mirabilis	6	5	0	1	5	0	2 (1)
Indole pos. proteus	2	2	0	0	2	1	0
Staph. albus	6	6	0	0	6	1	1
Other gram negatives	3	3	0	0	3	1	2
mixed infections	2	2	0	0	2	1	0
Totals	67	60	5	2	60	22 (4)	

* mean 26 days

** figures in ( ) indicate recurrences due to relapse, remainder due to re-infection

TABLE 2: Bacteriologic results in 67 patients treated with oxolinic acid.

monly equal to the MIC, occasionally one tube higher, and rarely more than one tube above the MIC.

Clinical Studies

Although a 28-day course of therapy was planned in all cases, actual therapy ranged from one to 49 days with a mean therapy duration of 26 days. Six patients were treated from one to seven days, five from eight to 14 days, seven from 15 to 26 days, 47 from 27 to 33 days and two from 40 to 49 days. The principal reason for changes in therapeutic duration was the occurrence of side reactions. Side effects were noted in 18 of the 67 (26.8%) study patients. The dosage was reduced from 750 mg twice daily to 500 mg twice daily in 14 of these 18 patients, but, in general, side effects occurred at a similar rate with either dosage. If side effects were present with a dose of 750 mg twice daily, most often they persisted, although slightly less prominent, with a 500 mg twice daily dose. Three of the 18 patients experiencing reactions continued therapy for the entire 28 days; however, therapy was discontinued 27 to seven days prior to planned termination of therapy in the remaining 15 patients. One of the 18 patients developed an apparent allergic cutaneous rash which cleared promptly with discontinuation of therapy on the 13th day of treatment. Reactions in the remaining 17 patients were equally distributed between the gastrointestinal and central nervous system. Gastrointestinal reactions were primarily nausea and vomiting and were considered mild in five instances, moderately severe in ten and severe in one instance. Central nervous system reactions were mainly those which could be broadly categorized as excitability: restlessness, insomnia, nervousness, etc. These were considered mild in nine cases and moderately severe in six cases.

Symptomatic response to therapy was prompt and, in general, paralleled the bacteriologic response as noted below. Of interest are the several patients in whom therapy was terminated prior to 28 days but yet in whom the infection was eradicated.

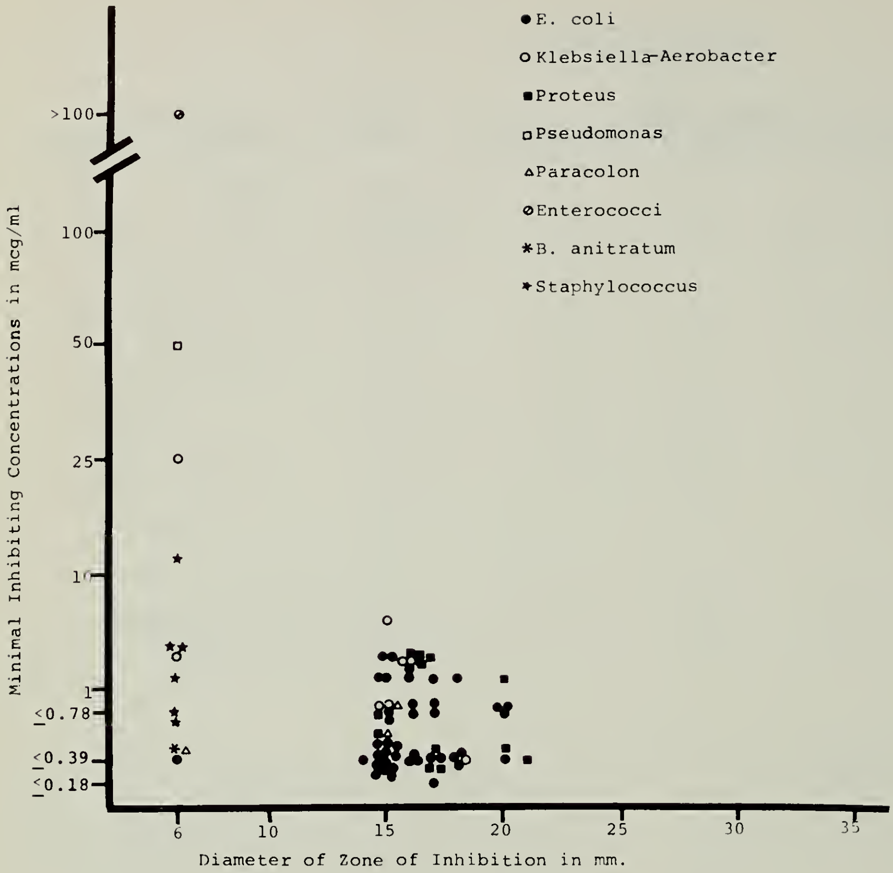

FIGURE 1-A

Comparison of tube-dilution MIC with zone of inhibition about oxolinic acid discs. (0.5 mcg disc)

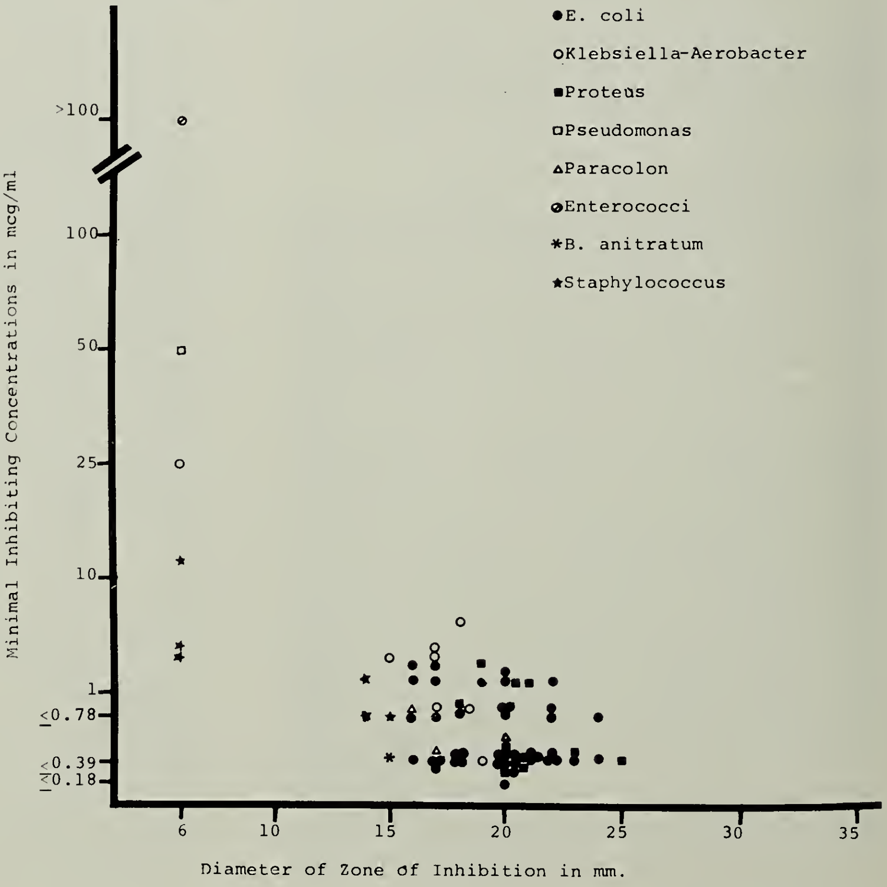

FIGURE 1-B

Comparison of tube-dilution MIC with zone of inhibition about oxolinic acid discs. (1.0 mcg disc)

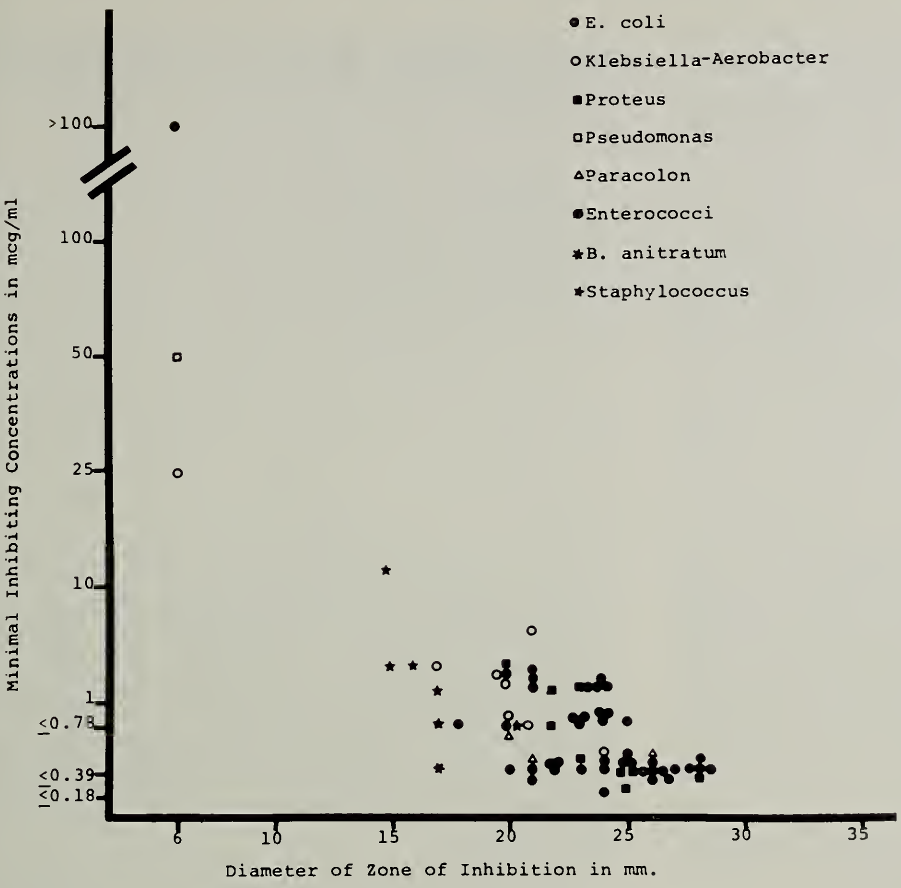

FIGURE 1-C

Comparison of tube-dilution MIC with zone of inhibition about oxolinic acid discs. (2.0 mcg disc)

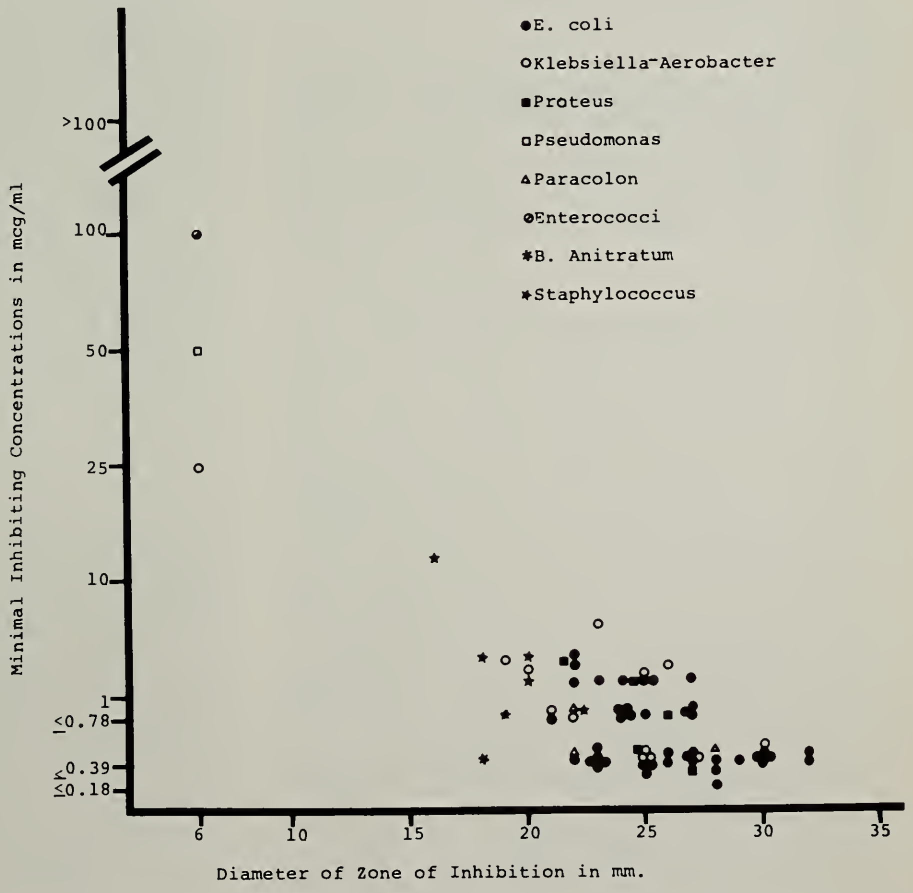

FIGURE 1-D

Comparison of tube-dilution MIC with zone of inhibition about oxolinic acid discs. (5.0 mcg disc)

Complete blood counts, urinalysis, BUN and SGOT were performed on all patients prior to and following therapy. In no instance were there noted any significant changes in these studies.

Bacteriologic Response

The bacteriologic results for the patients are summarized in Table 2. Urinary infection was eradicated in 60 of the 67 (89.5%) study patients. The infection was persistent in five instances, and superinfection occurred in two patients. Follow-up results (Table 3) reveal a recurrence of infection (two relapse and six re-infection) in eight of the 60 patients during the first follow-up month. Recurrence of infection was noted in an additional 14 (two relapse and 12 re-infection) patients during the subsequent two follow-up months. Overall recurrence of infection was noted in 22 (four relapse and 18 re-infection) of the 60 patients at risk during the three months following oxolinic acid therapy.

Results of serotyping for the somatic (0) antigen were used to aid in the differentiation between relapse and re-infection.

Comments

The *in vitro* bacteriologic results described in this report indicate that oxolinic acid is highly effective against *E. coli*, *Proteus mirabilis*, indole positive proteus, intermediate coliforms, and to a slightly less extent, *Klebsiella-enterobacter*. These *in vitro* results correlated well with the clinical studies in which urinary infection was eradicated from 60 of the 67 patients treated with oxolinic acid. Of interest were six patients in the study with urinary infection due to *Staphylococcus albus*. Although the oxolinic acid disc zones (Figure 1) for these staphylococci were somewhat smaller than the gram-negative zones, the MIC's were 3.1 mcg/ml or less in five of the six cases. Therefore, the six patients were treated with oxolinic acid, and in all instances the infections were eradicated. However, in our experience the majority of staphylococci and all enterococci are resistant to oxolinic acid.

The therapeutic results (89.5% bacterial eradication) described in this report are considerably better than those of D'Alessio et al,[8] who used a lower dose and shorter duration of therapy, but are comparable to those of Ronald et al,[6] who noted a 74% cure rate in 23 patients treated with oxolinic acid with a dose of 1000 mg twice daily for 14 days.

Infection persisted in five of the 67 patients treated with oxolinic acid. Four of the five persistent organisms demonstrated posttreatment resistance to oxolinic acid, and the MIC of the fifth increased from 0.39 mcg/ml to 6.25 mcg/ml posttreatment. Resistance emergence at this rate (5/67) does not seem unusually high and is consistent with the observations of Ronald et al,[6] who noted clinically significant resistant mutants in only one of 23 patients. On the other hand, Dr. D'Alessio et al,[8] treating with a dose of 500 mg twice daily, noted a considerably higher rate of resistance emergence. Therefore, both with regard to the prospect of bacterial eradication as well as minimizing the emergence of resistant mutants, this study and that of Ronald et al[6] both strongly favor a dose of oxolinic acid of at least 1.5 grams daily and for a minimum of 14 days.

The recurrence rate in this study was eight of 60 patients during the first follow-up month and 22 of 60 during the entire three month follow-up. This rather low recurrence rate (36.6%) is impressive for several reasons: (1) 64 of the 67 study patients had histories of recurrent urinary infection, (2) the follow-up period of three months in this report is longer than follow-up periods in similar reports, and (3) most (18 of 22) of the recurrences were due to re-infection.

Overall 38 of 67 (67 less seven persistent infections, less 22 recurrences) patients in this three-month study were cured with respect to eradication of and continued freedom from urinary infection. These satisfactory bacteriologic results are slightly minimized by the rather high occurrence (26.8%) of reactions to oxolinic acid. On the other hand, no toxicity was noted, and the gastrointestinal and CNS reactions were promptly reversed by discontinuation of therapy.

Summary

Oxolinic acid was administered to 67 pa-

(Continued on page 337)

MINOCYCLINE IN THE TREATMENT OF URINARY TRACT INFECTIONS

• A new tetracycline has been evaluated in the treatment of acute and chronic urinary tract infections. In this limited study, there was good clinical efficacy with minimal side effects.

William J. Holloway, M.D.

Minocycline (7-dimethylamino-6-deoxy-6-demethyltetracycline) is a new semisynthetic tetracycline which has a broad antibacterial spectrum. It is effective *in vitro* against many gram-positive and gram-negative bacteria including tetracycline-resistant staphylococci. Several reports[1-3] in the literature attest to its *in vitro* effectiveness, suggesting that it is the most effective tetracycline now available for clinical use. Animal studies have been reported[4] showing its effectiveness *in vivo*, but there are few reports[3] in the clinical literature of the use of minocycline in the treatment of human infections.

This study describes the use of minocycline in the treatment of patients with acute and chronic urinary tract infections. As a corollary to this study, minocycline was evaluated in the treatment of patients with bacterial respiratory infections, and these results will be reported separately.

Material and Methods

Forty-two patients with urinary tract infections were selected at the Wilmington Medical Center and the Brandywine Medical Center for inclusion in this study. Most of the patients with chronic urinary tract infection were from the Pyelonephritis Clinic of the Wilmington Medical Center, while the majority of the patients with acute urinary tract infection were from the population of the Brandywine Medical Center. There were 29 female and 13 male patients ranging in age from 16 to 85 with a median age of 54. The 42 patients fell into the following clinical categories: acute cystitis, nine patients; chronic cystitis, seven patients; acute pyelonephritis, six patients; chronic pyelonephritis, 17 patients and asymptomatic bacteriuria, three patients.

Minocycline (supplied by Lederle Laboratories*) was administered in a dosage of 100 mg every 12 hours following an initial loading dose of 200 mg. In some instances, in prolonged therapy, the dosage was reduced to 100 mg given once daily. The duration of therapy ranged from ten days to 18 months.

Patients included in the study were monitored by the following parameters before, during and following minocycline therapy: complete blood count, urinalysis, blood urea nitrogen, serum creatinine, total bilirubin, alkaline phosphatase and serum glutamic oxaloacetic transaminase. Serum and urine specimens were obtained from a representative number of patients for measurement of antibiotic and antibacterial levels.

Pathogens isolated from patients in this study were tested for susceptibility to minocycline by the disc-agar diffusion and test tube dilution techniques. In addition, during the annual antibiotic screen in 1968 and 1969, representative strains of gram-negative and gram-

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* Courtesy of Hugh MacDonald, M.D.

Table No. 1

Results of Therapy — Urinary Tract Infections

Type	Success	Number of Patients Qualified Success	Failure	Indeterminate
Acute Cystitis	8			1
Chronic Cystitis	2		5	
Acute Pyelonephritis	6			
Chronic Pyelonephritis	9	2	4	2
Asymptomatic Bacteriuria	3			
Total	28	2	9	3
		Grand Total	42	

positive pathogens were tested for susceptibility to minocycline using a standardized disc-agar diffusion technique.

Results of Therapy

Table No. 1 lists the results of therapy in these 42 patients treated with minocycline. The results were categorized as success, qualified success, failure and indeterminate. Patients considered to have a qualified success were those in whom chronic infection was satisfactorily controlled with resultant abacteriuria during maintenance therapy with minocycline but who relapsed when therapy was discontinued. In patients in whom it was impossible to assess the role that the antibiotic played in the final outcome of the infection, the result was considered indeterminate. Successes and failures need no explanation. As can be seen in the table, 27 patients experienced a successful result with an additional three patients being considered as qualified successes. Nine patients failed to respond to therapy with minocycline while in three patients, the results were considered indeterminate.

Acute Cystitis

Eight of the nine patients suffering from acute cystitis showed a prompt satisfactory response to minocycline therapy, while in one patient the result was considered indeterminate. In this patient, the cystitis followed an indwelling foley catheter and was due to a strain of enterococcus. Prompt symptomatic relief and urine sterilization resulted from the use of minocycline, but side effects prompted discontinuing the antibiotic on the third day and the results were considered indeterminate. *Escherichia coli* was the infecting organism in all eight patients with acute cystitis who responded favorably to minocycline therapy.

Chronic Cystitis

Five of seven patients suffering from chronic cystitis failed to respond to minocycline therapy. In three of these five failures, the infecting organism was a *Klebsiella* species while two patients were infected with a *Proteus* species. One patient with chronic cystitis due to *Escherichia coli* had a qualified success in that throughout six months of therapy (minocycline 100 mg daily), urine sterility was maintained, but on cessation of minocycline therapy, relapse with a resistant strain of *Escherichia coli* occurred. One patient with chronic cystitis due to a *Klebsiella* species received minocycline therapy for six weeks with relief of symptoms and a sterile urine for six months following cessation of therapy.

Acute Pyelonephritis

All six patients who suffered from acute pyelonephritis showed a satisfactory response to minocycline therapy. In each instance, therapy was continued for a minimum of two weeks. The infecting organism was an *Escherichia coli* in three instances and *Enterobacter*

TABLE NO. 2

MINOCYCLINE SERUM LEVELS

(22 patients)

Time	Range
One Hour	1.3 to 4.5 mcg/ml
Three Hours	1.2 to 3.5 mcg/ml
Five Hours	1.1 to 2.5 mcg/ml
Eleven Hours	0.6 to 2.3 mcg/ml

DOSE: 100 mg every twelve hours

in two instances; one patient was infected with an enterococcus. All of these infecting organisms were sensitive to minocycline *in vitro.*

Chronic Pyelonephritis

The response to therapy in chronic pyelonephritis was not as gratifying as in the acute infections, though several of these cases responded to long-term therapy with minocycline. All 17 patients with chronic pyelonephritis received a minimum of six weeks of minocycline therapy, and in some instances, therapy was continued as long as 18 months. The infecting organisms in the nine patients with chronic pyelonephritis who had a successful outcome were as follows: *Escherichia coli,* four cases; mixed infection with *Klebsiella* and *Escherichia coli,* one case; and one case each of *Citrobacter, Klebsiella, Pseudomonas* and *Enterobacter.* The two patients with chronic pyelonephritis who were considered as qualified successes were infected with strains of the *Klebsiella* species. These patients had failed to respond to other modalities of therapy and became asymptomatic and abacteriuric during eight weeks of minocycline therapy, but relapsed with the same organism following treatment. Two of the four patients with chronic pyelonephritis who failed to respond to minocyline therapy were infected with strains of *Pseudomonas* species, while one patient was infected with *Klebsiella* and another with *Escherichia coli.* In both instances where the results were considered indeterminate, there had been significant reduction in the bacterial colony count (*Proteus* and enterococcus), but it became necessary to discontinue therapy because of gastrointestinal side effects.

Asymptomatic Bacteriuria

Two patients with asymptomatic bacteriuria due to *Escherichia coli* and one patient infected with a *Klebsiella* were treated for six weeks with minocycline therapy and in each instance had a satisfactory response, with subsequent sterile urine cultures over a six-month follow-up period.

Side Effects

All 42 patients in this study were interviewed frequently to detect any side effects due to the antibiotic. Six patients reported gastrointestinal side effects manifested by nausea and vomiting in five instances and diarrhea in one patient. The diarrhea disappeared on continuation of therapy, and in two of the five patients with nausea and vomiting, this likewise subsided though therapy was continued. However, in three instances, the continued nausea required cessation of therapy, though in two of these three patients, therapy had been continued for a period of six weeks before nausea required discontinuation of minocycline.

The period of this study included two summers without evidence of photosensitivity. The patients were monitored by the above mentioned parameters, and the only instance of laboratory abnormality was an eosinophilia (9%) in one patient during the third week of therapy.

Laboratory Data

Table No. 2 lists minocycline serum levels in 22 patients, drawn at varying intervals following multiple dosing of minocycline, 100 mg every 12 hours. At one hour, the serum level ranged from 1.3 to 4.5 mcg/ml, while at 11 hours there was still a measurable level of minocycline in the serum ranging from 0.6 to 2.3 mcg/ml. Serum antibacterial levels performed on these same specimens revealed inhibition of the infecting organism in concentrations of 1:4 or better in a majority of the 20 specimens tested.

Ten strains of each	Minocycline	Tetracyline	Doxycycline
	(average concentration in mcg/ml)		
Pseudomonas species	38.8	67.5	80.0
Escherichia coli	3.05	42.8	15.6
Klebsiella species	7.97	19.8	15.9
Enterobacter species	16.2	17.1	21.0
Proteus species	70.0	100	100

Table No. 3

Comparison of In Vitro Effectiveness of Minocycline, Tetracycline & Doxycycline

Table No. 3 compares the *in vitro* effectiveness of minocycline with tetracycline and doxycycline against ten strains of each of five common, gram-negative urinary pathogens. It can be seen that minocycline compares favorably and is as good as or better than the other tetracyclines against all of these common pathogens.

Extensive *in vitro* evaluation of minocycline has been carried out during the annual antibiotic disc susceptibility testing carried out at the Wilmington Medical Center. Both the 5 and 30 mcg minocycline discs have been included in various portions of this study utilizing a well standardized disc-agar diffusion technique. The 5 mcg minocycline disc showed a satisfactory inhibitive zone (greater than 15 mm) against 98% of 200 clinical isolates of *Staphylococcus aureus.* In addition, the 5 mcg disc was effective against 68% of the strains of *Escherichia coli,* 57% of the strains of *Klebsiella,* and 25% of the strains of enterococcus. The 30 mcg disc showed a satisfactory zone (greater than 15 mm) against 91% of the strains of *Klebsiella,* 95% of the strains of *Escherichia coli,* 72% of the strains of *Proteus* but only 10% of the strains of *Pseudomonas aeruginosa.* When testing the clinical isolates from patients in this study, there appeared to be a satisfactory correlation between the disc-agar diffusion and the test tube dilution technique.

Discussion

While minocycline is active against tetracycline-resistant strains of staphylococci, the development of several new antistaphylococcal antibiotics makes it less likely that this agent will find clinical usefulness in the treatment of staphylococcal infections. However, this tetracycline does have a broad antibacterial spectrum with good *in vitro* and *in vivo* activity. In agreement with other reports[1,3] in the medical literature, our *in vitro* data suggest a slight advantage for minocycline over the other available tetracyclines in the medical literature, and we agree with other workers[2] that the *in vitro* susceptibility testing with tetracyclines can be greatly affected by variations of technique.

In this limited study, minocycline appears to be effective in the treatment of acute urinary tract infections due to tetracycline-sensitive organisms. As one would expect, the results in chronic urinary tract infection are less satisfactory. However, since more than 50% of the patients with chronic infection in our study had a successful outcome from minocycline therapy, further clinical trials with this antibiotic are indicated. No attempt was made to compare minocycline in a controlled manner with any of the other available tetracyclines. However, our past experience[5,6] with the evaluation of other tetracyclines in the Pyelonephritis Clinic would suggest to us that minocycline is as good as any of the other tetracycline agents available for clinical use.

Summary

Minocycline, a new tetracycline antibiotic, showed satisfactory *in vitro* effectiveness against a wide range of gram-positive and gram-negative microorganisms. This antibiotic

was utilized in the Pyelonephritis Clinic in the treatment of patients with acute and chronic urinary tract infections. In 16 patients with acute urinary tract infections, there were 15 successful responses while one patient had an indeterminate response. Fifteen of 26 patients with chronic urinary infections showed a successful response to therapy, while in nine patients there was a failure to show a significant response, and in two patients the response was considered indeterminate.

The usual dose of minocycline was 200 mg daily in two divided doses, with therapy being continued over a period of 14 days to 18 months. In a few selected patients, long-term therapy was continued with 100 mg of minocycline given once daily. The antibiotic was well tolerated with occasional gastrointestinal side effects.

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OXOLINIC ACID THERAPY OF RECURRENT URINARY TRACT INFECTIONS

(*Continued from Page 332*)

tients with recurrent infectious disease of the urinary tract. Although reactions to oxolinic acid occurred in 26.8% of the patients, urinary infection was eradicated from 89.5%. Emergence of resistance was relatively minimal, and a recurrence rate during three months of follow-up was only 36.6%.

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"Science commits suicide when it adopts a creed."
Huxley

CEPHALEXIN IN THE TREATMENT OF URINARY TRACT INFECTIONS

• Cephalexin is almost completely absorbed after oral administration producing excellent blood and urine levels. This antibiotic shows considerable promise in the treatment of acute and chronic infection of the urinary system.

Leo B. Hogan, M.D.

The cephalosporin antibiotics, cephalothin and cephaloridine, have received extensive clinical usage in the past few years. They have been reported to produce excellent results in various infections caused by gram-positive and gram-negative microorganisms.[1-4] The major disadvantage of these cephalosporins has been the necessity for their administration by the parenteral route.

Cephaloglycin, the first oral cephalosporin-C derivative to be made available, has been used extensively in clinical trials for the treatment of urinary tract infection.[5-8] This antibiotic will soon be available for clinical usage. Cephaloglycin produces satisfactory urine levels for the treatment of urinary tract infections, but blood levels with this antibiotic are not adequate for the treatment of systemic infections. With cephaloglycin, there has been a high incidence of gastrointestinal side effects, most notably diarrhea.

Cephalexin, the second cephalosporin derivative available for oral administration, has now had extensive clinical trials in the treatment of a variety of infections.[9,10] While this antibiotic seems to be less effective *in vitro* than the other cephalosporins against the common pathogens, the high blood and urine levels obtained after oral administration make this an interesting compound for further clinical trial. Also, cephalexin is so completely absorbed from the gastrointestinal tract that the incidence of diarrhea with this cephalosporin antibiotic should be considerably less than that experienced with cephaloglycin. The expectation that this antibiotic would be highly effective in the treatment of urinary tract infections prompted the current study.

Material and Methods

Patients with acute and chronic urinary tract infection were selected from the medical and surgical services of the Wilmington Medical Center, the Pyelonephritis Clinic of the Wilmington Medical Center, and the private outpatient population of the Brandywine Medical Center. Forty-four patients ranging in age from 8 to 78 years were selected for inclusion in the study. All patients in the study had positive urine cultures with plate counts greater than 10^5 organisms per ml. Eighteen of the 44 patients had chronic pyelonephritis while four had acute pyelonephritis. Nine patients had acute cystitis, eight had chronic cystitis, and five had chronic unclassified urinary tract infection. The patients selected were infected with a variety of urinary pathogens including *Escherichia coli* (21 cases), *Klebsiella* (ten cases), *Proteus* species (11 cases), *Enterobacter* (one case) and atypical coliform (one case). Toxicity studies included a hemogram, chemistry 12 profile (SMA 12) and urinalysis obtained before, at one week intervals during, and after therapy. When possible, blood and urine specimens were obtained for antibac-

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terial and antibiotic assay. Appropriate pre- and post-treatment cultures were obtained in each instance and at one- or two-week intervals in patients on prolonged therapy. The susceptibility of the infecting organisms to cephalexin was determined by the two-fold serial tube dilution technique, and all strains were tested by the disc agar diffusion technique utilizing 30 mcg discs of cephalexin as well as all of the other antibiotics used in our routine susceptibility testing.

Cephalexin was supplied by the Eli Lilly Company as capsules containing 250 mg of the drug and in sterile vials of 20 mg for laboratory investigation. The cephalexin was administered by mouth in doses of 250-500 mg every six hours.

Results

Thirty-two of the 44 patients receiving cephalexin therapy experienced a satisfactory response to this antibiotic. Nine patients were considered treatment failures, and in three instances the response was indeterminate. Six of the nine patients with treatment failures had the original organism eradicated and relapsed with a secondary pathogen. In the remaining three instances of failure, the original pathogen was not eradicated. Six of the nine treatment failures had chronic infection (five chronic pyelonephritis, one chronic unclassified urinary tract infection), and all six had been followed for a long period of time in the Pyelonephritis Clinic. Most of these patients had failed to respond previously to other methods of treatment of chronic urinary tract infection.

In the six instances in which failure was associated with relapse with a different infecting pathogen, the new pathogen was cephalexin resistant, the original infecting organism having been cephalexin-sensitive. In the three instances where failure was due to inability of the antibiotic to eradicate the original infecting organism, this organism was cephalexin sensitive suggesting that factors other than antibiotic failure were responsible for treatment failure.

The follow-up period in these patients showing a satisfactory response to cephalexin has varied from one to twelve months. Because of the easy accessibility of the majority of these patients, long term follow-up should be possible and can be reported at a later date.

One of the four patients with acute pyelonephritis deserves special mention. This was a 78-year-old female patient with acute pyelonephritis complicated by sepsis, and *Escherichia coli* was isolated from her blood stream. Cephalexin 750 mg was given by mouth on a four-hour schedule for five days, at which time it was changed to 500 mg every six hours for an additional five days. She subsequently was given 250 mg every six hours for two weeks giving a total treatment period of 24 days. She showed an excellent clinical response, and three months after cessation of cephalexin therapy, the urine culture was sterile. Six months after cessation of therapy, an *Escherichia coli* was again isolated from the urine though the patient was clinically well at the time. Because of her diabetes and the severe sepsis that she originally suffered, she was placed on long term cephalexin therapy, and now 18 months after her initial illness, she remains free of symptoms with a sterile urine culture.

Side Effects

Three of the 44 patients treated with cephalexin in this study experienced significant side effects (7%). In two instances, the side effects were severe enough to require cessation of therapy. One young female patient developed a vaginitis with marked pruritis and swelling which was severe enough to require cessation of therapy. An additional patient developed a generalized pruritis, and while there was no evidence of rash, the symptoms were severe enough to prompt cessation of cephalexin therapy. The only patients who developed gastrointestinal side effects experienced mild diarrhea which the attending physicians felt might not have been due to the cephalexin.

Ten of the 44 patients in this study showed mild alterations in their toxicity studies which may have been drug related. They were as follows: three patients showed mild elevation of the serum glutamic oxaloacetic transaminase level: in two of these patients, there was a transient elevation with a return to normal levels during the course of therapy while in the third patient, the transaminase returned to normal level after cessation of therapy. Three patients showed a relative eosinophilia of 6% or greater while on cephalexin therapy, and one patient developed a mild leukopenia (3400 WBC/cu mm) with a normal differential. All counts returned to normal levels within a few days after stopping cephalexin. In three instances, patients had transient glycosuria while receiving cephalexin therapy. These patients were not known to have diabetes mellitus, and this revelation prompted glucose tolerance tests in two of the three patients after cephalexin therapy. Both tests were completely normal.

Antibiotic Assay

Blood and urine for assay were obtained from a representative number of patients receiving 250-500 mg of cephalexin every six hours. The average blood level in 19 patients, one hour after dosing on the initial day of therapy was 21 mcg/ml; after five or more days of therapy, the average cephalexin blood level one hour after dosing in nine patients was 27 mcg/ml.

Random urine specimens were obtained in 15 patients for determination of cephalexin levels. These ranged from 50 mcg/ml to 3250 mcg/ml with an average level of 938 mcg/ml.

Summary

Forty-four patients with acute and chronic urinary tract infections were treated with cephalexin in a dosage of 250 or 500 mg at six-hour intervals. A satisfactory response was achieved in 72% of the patients treated. Most of the failures were in patients with chronic urinary tract infection who had been attending Pyelonephritis Clinic for a number of years and had failed previously to respond to other modalities of therapy. Cephalexin produced therapeutic blood and urine concentrations which far exceeded the *in vitro* bactericidal inhibitory concentrations of the antibiotic for the pathogens treated. Since these blood and urine levels can be obtained after oral administration of this antibiotic, it has obvious advantages over previous types of cephalosporin antibiotics available for clinical use.

While there was no attempt to carry out a controlled study comparing the side effects with cephalexin with those due to cephaloglycin, it appears that cephalexin produces a lower incidence of gastrointestinal side effects than the other oral cephalosporin derivative. It appears that further investigation is indicated to evaluate the proper role of this new antibiotic agent in the treatment of infectious diseases.

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"Medicine is as old as the human race, as old as the necessity for the removal of disease."

Haeser

THE SIGNIFICANCE OF THE INTESTINAL MICROFLORA

• Alterations in the normal bowel flora contribute to a number of clinical syndromes and disease entities. A better understanding of the ecologic balance between these microorganisms is mandatory.

SYDNEY M. FINEGOLD, M.D.

Normal Gastrointestinal Flora

Although presently used techniques do not allow for recovery of all intestinal organisms which may be visualized directly, considerable progress has been made in recent years in documenting the normal bacterial flora at various levels in the gastrointestinal tract. The stomach normally has very small numbers (less than 10^3/ml) of organisms.[1,2] The organisms seen include yeast, viridans streptococci and lactobacilli. Counts tend to be higher in gastric samples with higher pH's, particularly above pH 4.0. Counts rise to 10^5/ml and the flora is more varied following a meal; the pre-meal level is reached again in 30-45 minutes following the meal.[1]

In the upper small intestine, the flora is relatively simple and counts are usually in the range of 10^3 to 10^5.[1,2] The upper small bowel flora is made up primarily of gram-positive aerobic organisms, although small numbers of gram-negative anaerobic bacilli may be seen as well. Again, after a meal the counts increase and the flora becomes more complex, but most of the newly acquired organisms disappear within one and a half hours of the meal.[1]

As one progresses from the upper small bowel to the ileum, the flora increases in number and type. In the terminal ileum, Bacteroides and Bifidobacterium predominate, with coliforms in slightly smaller numbers.[1,2] In feces, the two dominant organisms are *Bacteroides fragilis* and Bifidobacterium, both being present at levels of 10^{10} to 10^{11}/gm of wet feces.[1,3] These two organisms account for more than 99% of the cultivable flora. Coliforms are the next most commonly isolated group, normally being present at a level of 10^6-10^7/gm and thus accounting for less than 0.1% of the total bacterial population. Other anaerobes found in feces include Sphaerophorus, *Bacteroides melaninogenicus,* Fusobacterium, Eubacterium, Clostridium and anaerobic cocci of various types. Lactobacillus is an aerobic or microaerophilic gram-positive bacillus found in about 50% of people, with mean counts (when present) of 10^7/gm. Other aerobic or facultative forms found include various types of enterococci and streptococci of the viridans type.

The flora of the small intestine may be much more profuse in the presence of pathology of various types, particularly obstruction.

Effect of Antimicrobial Drugs on Bowel Flora

Although many of the studies on the effect of antimicrobial compounds on the bowel flora are inadequate because of lack of proper anaerobic techniques and for other reasons, a considerable amount of information is at hand concerning these effects. A summary of the effect of various antimicrobial drugs on the normal bowel flora has recently been prepared.[4] Interest along this line has centered primarily about the possibility of staphylococcal enterocolitis as a complication of antibiotic

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therapy. The likelihood that organisms other than staphylococci may be important in this regard is discussed later in this manuscript. Modification of the normal flora may also interfere significantly with certain physiologic processes related to bowel flora, to be noted subsequently.

Changes in the bowel flora may also be induced selectively by antibiotics so as to determine the relative importance of various segments of the flora in certain physiologic functions and in various pathophysiologic states. For example, one can eliminate anaerobic bacteria with little or no change in aerobic flora by the use of oral lincomycin or one can eliminate aerobes with retention of most of the anaerobic flora by the use of oral kanamycin or related drugs. Oral polymycin eliminates *E. coli* and oral bacitracin may be used to decrease or eliminate streptococci and clostridia. It is important that one always does appropriate quantitative cultures to determine exactly what effect was produced in the particular patient under study since the results are not always predictable.

Effect of Intestinal Flora on Antimicrobial Drugs

Although much has been done regarding the effect of antimicrobial agents on the intestinal flora, it has not been generally appreciated that the reverse (effect of intestinal flora on antimicrobial agents) may be very important.[5] Two examples of this type of activity are the hydrolysis of succinyl- and phthalyl-sulfathiazole to the active drug, sulfathiazole, and the effect of the bowel flora on sulfadimethoxine (Madribon-Roche) which is normally excreted in the biliary tract as the glucuronide. The bowel flora deconjugates the glucuronide thus liberating free drug which is then reabsorbed. This enterohepatic circulation may account for the long duration of activity of this drug.

Importance of Normal Flora

Although the intestinal flora undoubtedly plays an extremely important role in the body's nutrition and physiology, comparatively little is known about this activity. We do know that *E. coli* and *Bacteroides fragilis* are capable of synthesizing vitamin K. Under certain circumstances, vitamin K production by intestinal bacteria may be important to the host. Since *B. fragilis* greatly outnumbers *E. coli* in the normal intestinal flora, it is reasonable to assume that *B. fragilis* is much more important in this regard.[6]

Bile acids play a very important role in fat absorption, bile formation, and regulation of cholesterol metabolism.[7] Intestinal bacteria modify bile acids in various ways including deconjugation of the attached glycine and taurine, dehydroxylation of the primary bile acids (cholic and chenodeoxycholic acids) to form the secondary bile acids (deoxycholic and lithocholic acids) and a number of other changes not all of which have been well characterized. The significance of some of the transformation products remains to be determined as well. In any case, it is known that the action of intestinal bacteria on bile acids is important for their conservation by means of enterohepatic circulation. Deconjugation of bile salts may be carried out by a number of bacteria, those of importance in the intestinal tract being *Bacteroides fragilis*, various species of Sphaerophorus, Bifidobacterium, other gram-positive anaerobic bacilli and, among the aerobic organisms, *Streptococcus faecalis*.[8,9] Dehydroxylation of bile acids is carried out by various gram-positive anaerobic bacilli and, to a limited extent, by some strains of *B. fragilis*, *Veillonella* and some aerobes.[8] Inasmuch as deoxycholic acid is the major bile acid found in feces, it is surprising that the dominant members of the fecal flora cannot be shown to have significant capacity to dehydroxylate cholic acid.

The conversion of bilirubin to urobilinogen is carried out by intestinal flora and may be interfered with by administration of certain antibiotics, such as chlortetracycline. However, the organisms in the normal bowel flora responsible for this conversion have not been identified.

It has been shown that neomycin in small doses may decrease the serum cholesterol and the cholesterol pool in the body.[10] It can also be shown that with neomycin therapy this type bile acid excretion is increased, but that whereas there is normal deconjugation of bile acids there is no conversion of cholic acid to deoxycholic acid. Whether neomycin, in this circumstance, acts by means of an effect on the intestinal bacterial flora or not remains to be determined.

The normal bacterial flora of the intestinal tract is certainly important in terms of a variety of infections which may arise secondary to perforation of the bowel, strangulation, obstruction by carcinoma or other mechanisms, or following bowel surgery. *B. fragilis* is one of the major organisms likely to be found in such infections, along with coliforms and enterococci; other anaerobes may be involved as well.

The possibility that intestinal bacteria may serve directly or indirectly as a source for re-infection in patients with recurrent urinary tract infection has been considered by many workers, and there is increasing evidence accumulating to indicate that this may be a fact.

The normal flora of the bowel constitutes one of our most important defense mechanisms, a fact that is not generally appreciated. In this connection, the excellent studies of Bohnhoff, Miller and Martin[11] are of interest. These workers showed that mice are rendered much more susceptible to experimental Salmonella infection after treatment with oral streptomycin which reduces the counts of Bacteroides in the mouse intestine. Salmonella infection in man may have been exacerbated or activated by ampicillin and oxytetracycline.[12,13] Dubos and Schedler[14] have shown that NCS mice, raised in isolation, have a predominance of lactobacilli in their intestinal flora. These animals are different from conventional mice in having a better early growth rate, the ability to grow on an imbalanced diet, resistance to lethal action of endotoxin and greater susceptibility to certain experimental systemic bacterial infections.

Diarrhea Following Antibiotic Therapy

In general, it has been considered that diarrhea and other lower gastrointestinal symptoms relating to antibiotic therapy are the result of a direct irritant effect of the drug. However, there are many ways in which alteration of the bacterial flora might explain these types of symptoms. Staphylococcal enterocolitis is a well-established entity which may result from a change in bowel fllora related to antibiotic therapy.[15] Salmonella infection following antibiotic therapy has just been discussed. There seems to be good evidence that, at least in infants, severe and even fatal diarrhea may be caused by *Klebsiella* and *Pseudomonas* and perhaps *Proteus.* There are other organisms known to be causes of diarrhea, the proliferation of which might be favored by antimicrobial agents, but there are no documented cases of such superinfection on record. Included in this group would be such organisms as enteropathogenic *E. coli*, Shigella, Edwardsiella and Yersinia. In addition, the normal flora of the bowel includes enterococci and Clostridium, both of which have been described as causes of food poisoning. An increase in counts of either of these types of organisms, or perhaps selection of certain strains with special capabilities of causing enteritis, might account for diarrhea following antibiotic therapy. Indeed, we have some tentative evidence[16] suggesting the possibility that significant increase in counts of enterococci may account for the diarrhea with lincomycin therapy — a sort of endogenous food poisoning.

We are becoming aware of a number of specific ways in which changes in bowel flora might account for diarrhea. These might be related to the types of changes which have just been discussed or perhaps to more subtle changes or rearrangements of the normal flora of the bowel. For example, several amines are considered to be toxic. Twenty-one of 26 infants with gastroenteritis of "unknown etiology" had phenylethylamine in their stools.[17] Phenylethylamine is produced by enterococci. Increased amounts of lactic acid or certain volatile fatty acids, all end products of metabolism of certain intestinal organisms, might account for some cases of diarrhea related to antibiotic therapy.[18] The dihydroxy bile salts, deoxycholate and chenodeoxycholate, have the property of inhibiting the reabsorption of sodium and water.[19] Conversion of bile salts by intestinal bacteria has already been referred to. Still another bile acid, lithocholic acid, induces inflammatory reactions when present in the free form. Lithocholic acid normally is found in the intestine in the sulfated form which is non-toxic,[19] but it is possible that certain intestinal bacteria might be capable of splitting off the sulfate portion of the molecule. Finally, studies of fecal fat in patients with steatorrhea have revealed the presence of a number of non-dietary fatty acids, principally 10-hydroxystearic acid.[20] Since these acids are not present in any dietary fats, they are presumably synthesized in the gut by bacteria. Long chain hydroxy acids are not found often in oils and fats, but are particularly evident in resins and oils used as cathartics.

It follows from what has been said that it is extremely important to choose an agent which modifies the normal flora least from among several that might otherwise be suitable for treatment of a given infection.

Intestinal "Sterilization"

While there are theoretical advantages to decreasing or eliminating bacteria from the intestinal tract prior to bowel surgery, and while many surgeons still prefer to attempt to do this, there is increasing evidence to suggest that this type of practice may not actually be beneficial and that there are certain hazards which may attend it. For example, a double blind study evaluating preoperative intestinal sterilization carried out at our hospital[21,22] indicated that patients getting either oral neomycin or oral kanamycin as preoperative bowel preparation had a significant incidence of *Staphylococcus aureus* in their feces and a significant percentage of postoperative infection of various types due to this same organism. On the other hand, placebo-treated patients had no *S. aureus* in the stool and no infections with this organism. In the antibiotic-treated group, there was also some overgrowth of other organisms such as *Klebsiella* and *Pseudomonas* in the feces which would be potentially harmful. Furthermore, the one thing which one might hope to accomplish with such preoperative bowel preparation — elimination or reduction of infections due to such elements of normal flora as *E. coli* and Bacteroides — was not accomplished. In addition, there is some evidence[23] to indicate that patients who have had antibiotic therapy prior to bowel surgery for malignancy are more likely to develop recurrence of cancer at the suture line subsequently.

It is well known that patients with hepatic coma or pre-coma often respond well to antimicrobial therapy such as oral neomycin. This is thought to be related to the reduction of intestinal flora which produces ammonia, although it is likely that other compounds may play a role in this clinical picture as well. While most workers have thought of urease-producing organisms as being the major offenders in this situation, the possibility remains that organisms capable of producing ammonia by deamination are important. Furthermore, information is needed as to just which organisms in the intestinal tract are the prime offenders, regardless of the mechanism.

Miscellaneous Conditions in Which Intestinal Flora Is Important

The "blind loop syndrome" and related types of malabsorption having in common bacterial overgrowth in the upper small bowel may be treated effectively with appropriate antimocrobial agents. It has already been pointed out that anaerobic bacteria are particularly important in deconjugating bile acids in the small bowel. Such deconjugation interferes with proper micelle formation and therefore leads to improper fat absorption and steatorrhea. The use of lincomycin in a patient with the blind loop syndrome, in whom both gram-negative anaerobic bacilli and coliforms were isolated from afferent loop contents, indicated that the offending organisms in this particular patient were the anaerobic gram-negative bacilli.[24] There is reason to believe that anaerobes are a major cause of this type of problem in general. Other situations in which overgrowth of bacteria in the small bowel may account for malabsorption, since a response may be obtained to antibiotic therapy, include tropical sprue, diabetic neuropathy and scleroderma.

Although specific pathogens have not been implicated in "traveler's diarrhea," the fact that this may be prevented with certain antimicrobial drugs indicates that there is some specific alteration of the flora which should be detectable with appropriate studies.

Some cases of so-called functional diarrhea may really represent abnormal alteration of flora without presence of a specific pathogen.

Herman's syndrome (lymphonodular hyperplasia of the small bowel with immunoglobulin A deficiency) may have malabsorption related to either bacterial overgrowth in the small bowel or giardiasis or both. We have had occasion to study one patient with this syndrome and found that the upper small bowel contents had a high count of organisms commonly found in the oral flora.

Patients with ileal bypass for obesity sometimes develop significant hepatic damage as a result of the operation. While there are no specific studies on this point, it is conceivable that this may be related to alterations of bacterial flora, perhaps in turn resulting in overproduction of lithocholic acid or some other toxic product. Lithocholic acid does induce bile duct proliferation,[19] and excessive production of sodium taurolithocholate by intestinal bacteria can cause a syndrome of cholestasis.[7]

Feeding of lithocholic acid to rats leads to gallstones formed of insoluble calcium salts of either free or glycine-conjugated lithocholic acid or a hydroxylated lithocholic acid. Calcium glycolithocholic stones might occur in human beings who had bacterial overgrowth of the small intestine.[25] Lithocholic acid would be produced by dehydroxylation of chenodeoxycholic acid in the small bowel. This might also cause liver damage. Feeding of bile salts to humans may lead to a proportionately greater increase in phospholipid than in cholesterol in the bile and a proportionately greater increase in both of these compounds than in bile acids.[26] This type of response suggests the possibility that a lack of adequate bile acid production and/or bile acid reabsorption might be an important factor contributing to the presence of insufficient amounts of bile acids and phospholipid to solubilize biliary cholesterol.

Finally, we come to the interesting possibility that intestinal bacteria may play a role in intestinal cancer. Large bowel malignancies are more prevalent in developed than in under-developed countries, Japan representing a notable exception. Immigrants from areas with a low incidence of bowel cancer tend to show the same high incidence of this cancer as the local populace.[27,28] Changes in diet may be very important in this regard, and diet is known to affect the intestinal bacterial flora.[28] It is interesting in this connection to note that degradation of bile salts is an important metabolic activity of intestinal bacteria and that it is possible using various bacteria in the laboratory to convert deoxycholate into 20-methylcholanthrene, a very potent carcinogen.

Summary

We have outlined the make-up of the normal intestinal flora and discussed briefly the effect of antimicrobial drugs on bowel flora and the effect of the bowel flora on antimicrobial drugs. We have given a number of examples of how the normal flora of the bowel is or may be important to the host. We have discussed possible mechanisms for diarrhea following antibiotic therapy and have considered the matters of preoperative bowel flora depletion and of the use of antimicrobial drugs in hepatic coma. Finally, we have briefly considered a variety of pathologic conditions in which bacteria are known to be important or in which they may play a role.

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(Continued on page 350)

THE ELUSIVE GONOCOCCUS

• The control of gonorrhea in the United States is a critical challenge to the medical profession. A major effort will be required to meet this challenge.

WINDER L. PORTER, M.D.

Twenty-five years ago, I attended a National VD Symposium where it was proclaimed that gonorrhea was on the run and we need no longer worry about it as we possessed the means to wipe the disease off the face of the earth. We are still suffering from the devastating influence of that false prediction. Though a few of us frantically cry out about the gravity of the situation, we just cannot generate the type of concern which needs to be addressed to this major public health problem. In the meantime, the gonococcus has developed new defenses and become progressively more elusive.

Just how serious is the problem? Last year in Delaware, the most frequently reported communicable disease was influenza. The second most frequent was gonorrhea with 1761 cases. This represented an increase from the previous year, when gonorrhea was number one, and continued a succession of years in which each reported annual incidence has exceeded that of the previous year. This annual increase in reported cases is seen throughout the United States where the increase has been over 14% in each of the last two years and 12% the year before that. The rise in infectious syphilis, the disease which forms the basis for most of our finanical support, appears to have been checked, at least nationally.

Whether the number of cases occurring each year is actually increasing to this extent can be questioned, for we know perfectly well that only a fraction of the cases are ever reported and it could be that a greater percentage of the cases have recently come to our attention. Also, it is frequent for patients to receive treatment without laboratory confirmation and without a report of any kind. We learn about these or see them only when failure, relapse, or reinfection ensues. The 1968 National Survey of Venereal Disease Incidence showed that four out of five cases of venereal disease were treated by physicians in private practice but that private physicians reported only about one out of every nine cases treated. From that survey it is estimated that nearly three-fourths of all the reported cases were those treated in public facilities and that more than one million other cases were treated by private physicians who made no report. Morever, there are many other cases which do not enter the statistics, either because gonorrhea is not suspected and not looked for, or because treatment is given without confirmation.

With so many hidden cases, distribution figures can be misleading for those who can afford the anonymity of private care are generally in better socio-economic circumstances and probably in a somewhat different age bracket. Of the cases reported in Delaware last year, 34% were between 20 and 24 years old, and another 28% were between 15 and 20. The age at which most cases are reported is 19 for males, and 18 for females. There is good evidence that the spread into higher age groups, particularly in the female, is greater than usually suspected and revealed only

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when a concerted effort is made to detect and confirm infection in older patients.

The cardinal symptoms of gonorrhea in the male are urethral discharge and discomfort upon urination. A man who experiences these symptoms for the first time is apt to seek treatment, but it is entirely fallacious to believe that every infected male voluntarily seeks treatment. We regularly see patients who have been going around for three or four weeks with a supposed "strain" or "drip", and others who, when confronted with the opinion that they do have gonorrhea, offer sexual excitation or simple failure to wash as explanation for their symptoms. Some are carrying oral medication which they take according to their symptoms. Still others have no symptoms and are recognized only by culture or examination of the urinary sediment. This is particularly true of those who have been treated inadequately, especially with oral medication. And while a simple gram-stain is highly diagnostic in the acute state, a great many cases will be missed if dependence is placed upon smear alone especially in the less acute or those partially treated.

Epididymitis a Complication

A complication which now is being seen more frequently is epididymitis. Still fortunately uncommon are arthritis, septicemia, and endocarditis. Urethral stricture is much less common since we have abandoned meddlesome local medication and instrumentation, but acute involvement of the prostate is still encountered although less often leading to true abscess formation.

The gonococcus is notorious for starting a fight and then bailing out, leaving the field to other organisms, notably staphylococci and enteric pathogens which prolong the urethritis. While so-called NSU (non-specific urethritis) or NGU (non-gonococcal urethritis) may arise *de novo*, it is often an accompaniment or sequela of gonorrhea. Some of you may remember the early days of World War II when it was an offense punishable by court martial to contract venereal disease, and it was axiomatic that those above a certain rank did not contract gonorrhea, although it was acceptable for them to have NSU.

Incidence in the Female

Although women infected with gonorrhea may also have genital discharge and dysuria, many are truly asymptomatic. Vaginal discharge is such a frequent gynecologic complaint that it cannot be depended upon as a symptom unless of recent origin or altered in character. Besides discharge and urinary discomfort there may be pain and disturbances in menstruation, particularly what I call "stuttering menstruation" in which the patient reports that she thought she was having a regular period, wore a pad for a day or two, stopped, and then started bleeding again. When the Fallopian tubes are involved there may be severe abdominal pain, fever, anorexia, etc. — the familiar PID. While gonorrheal arthritis used to be seen more commonly in men, it now is more often seen in women, especially the pregnant, in whom it often presents as migratory polyarthritis easily mistaken for rheumatic fever.

The true incidence of gonorrhea in the female cannot be estimated for, as stated previously, it turns up much more often if suspected and looked for. There have been reports of incidence as high as 30% in correctional institutions, from 5 to 8% in prenatal clinics, from 5 to 30% in planned parenthood clinics and up to 8% in the offices of private physicians, not necessarily just those serving low income groups.

Culture is absolutely necessary to confirm the diagnosis, and specimens must be taken from multiple sites. The highest yield is obtained from the cervix, but it has been pointed out that the yield can be increased about 8% by including the rectum in addition to the conventional culture sites of the urethra and vagina. It was thought that special measures using an anoscope and taking pains to get the specimen from the crypts were needed to obtain proper rectal cultures but there is recent evidence of satisfactory results on specimens obtained from anal swab when care is taken to avoid feces. That a single negative determination is inconclusive is illustrated by one study in patients tested a week apart without treatment in the meantime. In this study, 6.4% were found positive on initial examination, but not at the repeat visit, and another 8.6% were turned up from among those who were negative on the first examination. In our situation we cannot await the results of confirmatory tests but must do what we can while we have our patients at hand; when in doubt, we treat.

I not infrequently am asked what to do with an infant whose mother has been found to have gonorrhea which was not known to be present at the time of her delivery. There can be no doubt that the time-honored Credé treatment has been highly efficacious in reducing the incidence of ophthalmia and that in the great majority of cases where gonorrhea is present and not suspected, the child gets by unscathed, so that in most instances it is safe merely to keep a close watch upon such an infant. Nonetheless where there is question about full cooperation in having the child followed, one may be justified in administering specific treatment. In some states, the physician is given the option of deciding what type of prophylaxis, if any, should be administered to infants' eyes. Almost always the highest percentage of failure is encountered when a procedure other than Credé has been employed, more often in the private or suburban hospital than in those which largely serve the inner city.

The risk to the infant is not confined to the eyes; infantile vulvovaginitis occurs more often after breech deliveries, and there have been sporadic reports of arthritis in the newborn and even of fatal septicemia. Not to be overlooked is the attendant at delivery; a physician I know lost an eye when membranes ruptured and there was a gush of gonococcal contaminated amniotic fluid into his face.

The treatment of choice for gonorrhea is still penicillin, and, as always, we have to say the proper dose is "enough." When the death knell of this disease as a public health problem was so freely predicted, our treatment consisted of 50,000 units repeated in three to four hours with entirely satisfactory results. Since then the recommended dose has slowly but steadily increased. When I reported in the early fifties that we found it necessary to give much larger doses than usually recommended, I was pooh-poohed and told there was no such thing as penicillin-resistant GC and that other organisms were responsible, or these were reinfections.

Organisms Less Susceptible to Penicillin

As years passed, others came onto the bandwagon and it is now generally recognized that the gonococcal organisms are increasingly becoming less susceptible to penicillin. This situation is illustrated by the experience in Philadelphia where 52% of the organisms obtained by random culture in 1965 were susceptible to concentrations of penicillin less than 0.05 mcg/cc, while just three years later only 26% of the strains cultured were susceptible to the same concentrations. Perhaps the shift is more dramatically illustrated by another study where less than 3% of strains encountered in 1955 were resistant to concentrations below 0.5 units/ml while some 40% of strains cultured in 1965 were resistant to that concentration and more than 60% of those recovered in 1968-69 were resistant.

Now our regular initial dose is 2.4 million units of procaine penicillin for men and 4.8 million units for women. Even with these doses, some places are reporting as high as 30% failures and advocate that probenecid be added to prolong the action of the penicillin. It should be emphasized that cure requires a high blood level for a brief period, and delayed absorption preparations like benzathine penicillin may fail because of insufficient blood level.

We have made an effort to evaluate some other drugs in collaboration with Dr. Holloway. However, one must bear in mind that we do not have the type of close control possible in the military or in an institution. We may today see a patient who promises by all that is holy to return in two or three days so that we may evaluate response to treatment and yet we may not see him for two or three weeks, if at all. It is not safe to assume that those who fail to return have been cured, and it is never possible to be sure that reinfection is not responsible for what appears to be drug failure. Also in our situation, one cannot be satisfied with mere bacteriologic cure, for when the cultures are negative, the patient may still complain of discharge or of discomfort with urination. Penicillin has the advantage of effectiveness against a broad range of secondary organisms which account for persistent symptoms; ampicillin covers an even broader range but is too expensive for routine use. The tetracyclines also rank high in suppressing secondary organisms. What we are looking for is an alternative preparation which is relatively cheap, covers a wide spectrum, and can be administered in a single session. Oral medication is seldom taken as frequently or as long as it is prescribed. While many of the broad-spectrum antibiotics also are effective against syphilis, the doses given for gonorrhea would usually be quite inadequate to suppress concomitant infection with syphilis.

When I was invited to participate in this symposium, I felt that the subject of gonorrhea warranted enough consideration to consume the full time allotted. Since then there has been an epidemic increase in infectious syphilis. Instead of the average of about one new case per week that has been the pattern for the past several months, there has been a precipitous rise to 28 new cases in March, 21 of which were in the primary or secondary state. In assembling material for this presentation, I projected there would be 40 new cases for the month of April based upon the indicated trend. I overshot the mark by a couple of cases, but in these first few days of May the deficit has been made up.

These cases have turned up from all directions: from private physicians, from premarital and foodhandler examinations, from correctional institutions, from patients seen at each one of the local hospitals, and from epidemiologic investigation of other cases. An appalling realization is the number of these patients who had received attention elsewhere without recognition of the possibility of syphilis, having received salves for "hair cut" or "detergent" rash, oral medication for gonorrhea, and all kinds of pills, douches, and suppositories. One patient with florid lesions of secondary syphilis was told she had chicken pox.

At least ten of these patients had gonorrhea as well as syphilis, and some were seen initially because of that disease, including two or three who had lesions which they had not noticed or which they did not consider significant. Undoubtedly, others had gonorrhea which was not confirmed because treatment was initiated before definitive examination could be carried out. Another three have been treated for gonorrhea contracted since treatment for syphilis was completed. We make a practice of monitoring all patients treated for gonorrhea for the possibility of concomitant syphilis and can document for many the period within which they contracted syphilis on the basis of previous recent examinations. At this very moment, I am concerned about one who is in the seventh month of pregnancy and who had no satisfactory treatment because she claims to be allergic to penicillin and also has not been able to tolerate tetracycline.

The Resurgence of Syphilis

Part of the resurgence of infectious syphilis is attributable to cases which might have been curtailed or controlled by penicillin used to treat gonorrhea. It could well be that we will have to redirect our thinking and resume routine use of long-acting penicillin in addition to the high doses of short-acting penicillin recommended for treatment of gonorrhea.

For some time we have advocated that any female named as a sexual contact of a patient with gonorrhea should receive adequate treatment for gonorrhea even though she may not show any clinical or laboratory evidence of being infected. This policy has been extended to the homosexual male named as a contact and since this type of patient has been particularly involved in the current epidemic rise in syphilis, it is exceedingly important that particular attention be addressed to syphilis prophylaxis as a part of their management and that they be subjected to sustained surveillance.

So far most of the patients have been mature adults who have been married at one time, but the lower age range extends to 14 years. The chain of events has been entirely predictable as the stage was already set. It is not possible at this time to say that the tide has turned and that the spread has been checked even though now new cases are the subject of the most intensive epidemiologic investigation.

Just recently, I encountered a group of students from a nearby institution of higher learning who were staging what amounted to a mass "love-in" where they shared their affections indiscriminately with one another. One member contracted gonorrhea which he shared with his companions to the extent that except for one individual every member of the conclave was also proven to have contracted gonorrhea. They took it as a huge joke just as if it were scabies or body lice, which also are being seen more commonly. It could just as readily have been syphilis which they were bouncing back from one to the other and except for a mere happenstance, none of these kids might have come to our attention and received proper investigation. Or possibly, the first case might not have been recognized until the school year had terminated and others had dispersed in many directions.

With epidemic syphilis added to the tidal wave of gonorrhea patients for whom we lack sufficient facilities to handle properly, you can see we are in deep trouble. And as each patient emerges from our clinic, and tells his buddy the doctor's verdict, his friend mentally checks the links to see if he too is caught in the chain, and too often is forced to the conclusion, "I've got it too."

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THE SIGNIFICANCE OF THE INTESTINAL MICROFLORA

(*References Continued from Page 345*)

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"As long as vitalism and spiritualism are open questions, so long will the gateway of science be open to mysticism." *Virchow*

THE RAPID DIAGNOSIS OF GONORRHEA

• The lack of a rapid accurate method for the diagnosis of gonorrhea makes it necessary for the physician to treat all suspects or risk not treating active disease.

Nancy K. Larson, B.A.
Janet L. Clark, Ph.D.
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In the diagnosis and treatment of gonorrhea, the clinician is faced with a dilemma—whether to treat all patients on the basis of a clinical suspicion of gonorrhea or to wait for laboratory confirmation and frequently lose infected patients for treatment and follow-up.

In the male patients, a gram-stain of the urethral discharge affords a quick means of diagnosis although a negative smear does not rule out the possibility of gonorrhea. In female patients, however, this method is not reliable at all and cultures are mandatory.

Cultural confirmation of the gonococcus by classical methods which use sugar fermentation for identification requires two to ten days, making the lapse between clinical suspicion and laboratory confirmation too long to delay treatment.

The usual fluorescent antibody (FA) method,[1] which consists of identifying organisms from growth on Thayer-Martin plates after incubation for 16-48 hours, has shortened the laboratory time and appears[2] to be as accurate as the culture method mentioned above.

This shortened laboratory time is more satisfactory than the classical culture method but still does not answer the clinician's need for immediate diagnosis. The direct fluorescent antibody technique, using a conjugate to stain the direct smears of urethral exudate, reduces the time to one hour, but also reduces the accuracy.[1,3]

This paper reports our evaluation of a more rapid (2.5 hours) fluorescent antibody method, attempting to provide a quick, reliable technique for detection of *N. gonorrhoeae.* #

Material and Methods P

Cultures were taken with cotton swabs which were immediately streaked onto Thayer-Martin plates. These plates were incubated for 16 to 48 hours and then suspected colonies were examined for *N. gonorrhoeae* by the FA method and confirmed by sugar fermentation. The same swab was then placed in 1.5 ml Mueller-Hinton broth to which had been added human serum (5%), IsoVitalex (Bio Quest) enrichment (1%) and V-C-N inhibitor (1%), the latter two being components of the Thayer-Martin medium. This tube was incubated in CO_2 at 35-37°C for two hours after which a smear was made from the swab. The broth was centrifuged at 2500 rpm for five minutes and the supernatant fluid decanted. The sediment was suspended in 1 ml PBS (pH 7.2), the tube centrifuged and the supernatant fluid decanted. A second smear was then made from the sediment. Both slides were air-dried, fixed and stained with the fluorescent conjugate which had been diluted with bovine albumin-rhodamine counterstain

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(1:40). This stains the epithelial and white blood cells a red-orange color preventing the diplococci from being masked with non-specific fluorescence. Controls of *Staphylococcus aureus, Aerobacter cloacae, Mima polymorpha Oxidans* and other species of *Neisseria* were included to check the specificity of the staining.

Cervical and urethral cultures were obtained from 244 randomly selected patients at the Venereal Disease Clinic of the Wilmington Health Unit.

Results

N. gonorrhoeae was identified either by the rapid (two-hour incubation) FA method or by the delayed (24-hour incubation) FA method or by both methods in 83 (34%) of the cases. Positive cultures were obtained from 27 of the 114 females (23.7%) and from 56 of the 130 males (43.0%).

The patient population included those patients returning for posttreatment follow-up, so gonococcus was not anticipated in all patients from whom cultures were obtained.

Of the 244 specimens studied, there was agreement between the two methods in 234 (96%) cases. Positive identification by both the rapid and the delayed methods was made in 73 of 83 cases (88%). Five (6%) were positive by the delayed 24-hour method alone. Since it is possible that the few organisms present were left on the plate which was inoculated first, perhaps if two swabs had been used, one for the plate and one for the tube of broth, more of the broth cultures would have been positive. This is suggested because the swab and the sediment were plated after the smears had been made, and in two cases no *N. gonorrhoeae* multiplication occurred. The other three cultures yielded organisms on subculture so the two-hour incubation was evidently insufficient in these cases.

Five specimens were positive after the short incubation but not the delayed method. It is most probable that these bacteria were not viable since plating the swab and the sediment produced no growth.

It would be desirable to have only one smear to evaluate, either from the swab which had incubated two hours in broth or the sedimented organisms from the broth. In over half (56.4%) of the cases, positive identification was made from both the swab and the sediment. If either of these methods had been used alone, however, 20-25% of the positives would have been missed. Calcium alginate swabs will be evaluated to determine if all of the organisms can be released into the broth, thus requiring only one smear, the sediment.

Based on these results, we have concluded that this method with a short (two hour) incubation method may have a place in venereal disease clinics equipped for fluorescent antibody procedures. Further trials seem warranted.

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TO PROVIDE FOR HIS OUTSIDE AFFAIRS . . .

Recognition of the important relationship between social services and medical treatment is not new. It is apparent that it was recognized by Hippocrates.

Consider his first aphorism:

Life is short: and the art long: and the right time, an instant; and the treatment precarious; and the crisis grievous. It is necessary for the physician not only to provide the needed treatment, but to provide for the patient himself, and for those beside him, and to provide for his outside affairs.

THE TREATMENT OF GONORRHEA WITH SPECTINOMYCIN AND RIFAMPICIN

• The prevalence of gonorrhea and the increasing incidence of treatment failure have prompted the study of new antibiotics in this disease.

Russell Labowitz, M.D.
Winder L. Porter, M.D.
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Recent periodic reports from the Public Health Service indicate that the incidence of gonorrhea is increasing in the United States. Several factors may be responsible for this increase: the short incubation period of the infection, the lack of immunity to repeated infections, and the increasing "resistance" of gonococcus to antibiotics, a particular problem with the Vietnam recruits.[1]

When penicillin was first available for the treatment of gonorrhea, *N. gonorrhoeae* was extremely sensitive to low concentrations of this antibiotic. However, in 1958, Curtis and Wilkinson[2] reported some strains of gonococci to be less sensitive to penicillin *in vitro,* and this observation correlated with a higher clinical relapse rate. Within the past decade, there has been reported an increase in the number of penicillin-insensitive strains which require higher serum levels of penicillin for eradication. The recommended dose of penicillin has been increased at regular intervals during the last few years in order to deal more effectively with this problem of increasing resistance. Despite this, there has been an increasing number of reports of treatment failures with supposedly adequate doses of penicillin. For example, the treatment of gonococcal urethritis in military personnel in the Far East with 2.4 million units of procaine penicillin results in 20-30% treatment failures. In a well controlled study[1] aboard an aircraft carrier, 63 men who recently had returned from leave in the Far East, were given 2.4 million units of procaine penicillin with 18 (29%) treatment failures.

It appears possible that future gonococcal strains will require even greater concentrations of penicillin, which would necessitate a therapeutic dose difficult to administer to an outpatient population. For this reason and because of the problem of penicillin allergy, new antigonococcal agents must be evaluated for their effectiveness in the treatment of gonorrhea. The ideal antigonococcal agent should be effective as a "one shot" treatment, easy to administer, non-toxic and not cross allergenic with penicillin.

In the last two years, we have had the opportunity to evaluate in the clinic two investigational antibiotics effective *in vitro* against *Neisseria gonorrhoeae.* Spectinomycin (Trobicin*) is an antibiotic produced by the fungus *Streptomyces spectablis* and has a wide spectrum of activity against both gram-positive and gram-negative organisms, including *Neisseria gonorrhoeae.* Rifampicin (Rifampin**) is a semi-synthetic antibiotic belonging to the group of rifamycins produced by *Streptomyces mediterranei.* It displays a high

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* Upjohn Company
** Dow Chemical Company

order of effectiveness *in vitro* against the gonococcus but most recently has received attention for its use in the treatment of tuberculosis.

Material and Methods

All patients were selected from the population of the venereal disease clinic. Most of the patients had had a previous history of gonorrhea and had received prior treatment with penicillin. All of the patients had clinical evidence of gonorrhea at the time of initial examination. Pre-and posttreatment urethral or cervical smears and cultures were done on each patient, and all positive cultures were confirmed by the fluorescent antibody technique. In addition, a routine urinalysis and VDRL were performed on each patient.

In the first study, female patients received 4.0 grams of spectinomycin intramuscularly (usually in two injection sites), while male patients received 2.0 grams intramuscularly. Follow-up visits were requested 48 hours and one week after treatment, at which time the patient was reexamined and recultured.

The second study was confined to male patients who received a single oral dose of 900 mg of rifampicin under the direct observation of the physician in attendance at the clinic. In addition to the cultures, urinalysis and VDRL, each patient treated with rifampicin and pre- and posttreatment blood counts and platelet estimations. Follow-up examination was requested 48 hours after therapy.

Results

A total of 85 patients was treated with intramuscular spectinomycin. Twenty-two patients were lost to follow-up. Eight patients were unsuitable for evaluation (five patients had negative pretreatment cultures, and three patients were classified as reinfections). Of the total of 55 patients that could be evaluated, 30 were male. In 26 of the male patients (87%), the results were satisfactory in that the patients were asymptomatic and posttreatment cultures were negative. Two patients (6.5%) were still complaining of dysuria and/or discharge after 48 hours although smears and cultures were negative and in two patients (6.5%), there was bacteriologic failure.

Eighteen (72%) of the 25 females were treated successfully, while four female patients (16%) remained symptomatic despite negative smears and cultures. In three patients (12%), cultures remained positive. No significant side effects were noted except in one patient, who suffered transient dizziness 24 hours after the injection.

Rifampicin was used to treat 72 other cases of gonorrhea. Twenty patients were lost to follow-up, and reinfection could not be ruled out in two patients who returned to clinic beyond the two week follow-up period. Of the remaining 50 cases, 36 (72%) were treated successfully. Six patients (12%) were still symptomatic despite negative smears and cultures. Eight patients (16%) failed to respond (clinically and bacteriologically) even though the pretreatment strains were sensitive to rifampicin. In two of these eight patients, the posttreatment organisms were completely resistant to rifampicin by disc and a third had only a 10 mm zone. This raises the question of development of resistance *in vivo.* It is interesting that four patients who were treated successfully with rifampicin became reinfected and received a second course of rifampicin therapy. The pretreatment strains in all four patients were sensitive to rifampicin. The second treatment was successful in two patients and failed in one patient. In the fourth patient the culture was negative, but the patient still had symptoms, including urethral discharge.

Neutropenia and cholestatic jaundice have been reported to be associated with rifampicin treatment, usually in patients on maintenance therapy, but no hematological abnormalities or jaundice was noted in this study. One patient did complain of transient diarrhea within 24 hours after taking the drug.

Discussion

It appears from this limited study that intramuscular spectinomycin is an adequate treatment for acute gonorrhea in male and female patients. On the other hand, experience with rifampicin in 50 male patients with gonococcal urethritis suggests that this agent is not as promising in the treatment of gonorrhea. The apparent development of resistant strains in four patients following therapy casts doubt on the potential value of rifampicin as an alternative drug for the treatment of gonorrhea.

No serious side effects were noted from either antibiotic. One patient complained of transient dizziness following spectinomycin therapy.

Sixteen percent of the females treated with spectinomycin were still symptomatic despite negative cultures. This is disconcerting because in the absence of satisfactory, rapid diagnostic tests, retreatment of symptomatic patients is mandatory. Frequently the persistence of clinical evidence of disease is due to pathogens other than the gonococcus. A number of these female patients had abundant trichomonads, identified on smears, which may have contributed to their symptomatology. In a recent report by Tsao,[3] 620 patients (42%) of 1,466 patients with culturally proven gonorrhea had concomitant trichomoniasis.

There may be one or more causes for the so-called post gonococcal urethritis (PGU). Whether this entity represents persistence of gonorrhea (perhaps in the L-form stage), a concomitantly acquired non-gonococcal urethritis such as trichomoniasis, T-strain mycoplasma infection, or just a slow resolution of urethral inflammation following adequate therapy, has yet to be determined. In any event, the occurrence of PGU is increasing even after "adequate penicillin" therapy. In a prospective study[4] done on a ship, PGU was present in nearly two-thirds of 58 men treated with procaine penicillin and probenecid.

Summary

Because of the relatively small size of this study, no categorical statements can be made about the clinical efficacy of these two drugs. Continued clinical trials are necessary to find the ideal antigonococcal agent. In the meantime, the resistance patterns of the gonococci in this country must be followed very closely and the search for alternative treatments continued. At the present time, "penicillin resistant" gonorrhea is more of a problem in military personnel in Southeast Asia than in the United States. However, with the recent return of thousands of troops from Vietnam, the problem undoubtedly will become greater in this country.

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ANIMAL STORIES: HIBERNATION

The physiologic adaption of animals continues to fascinate us. Consider, for example, this bit of data regarding the hamster. His normal heart beats at the astounding rate of 500-600 times per minute, but while the wee beastie sleeps, his S-A node decreases its rate of firing so that the little hamster's heart beats only six times per minute.

The great grizzly bear excretes during summer's heat more than two litres of urine daily; in *three months* of hibernation his urinary output may total less than six ounces.[1]

Hibernation, Editorial JAMA 205:94, 1968.

CEPHALEXIN IN THE TREATMENT OF GONORRHEA

• **Cephalexin, an oral cephalosporin, produces blood levels comparable to those resulting from parenteral cephalosporin administration. Therefore, evaluation of the efficacy of this new antibiotic in gonorrhea is indicated.**

William A. Taylor, M.D.
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Over the last several years, gonorrhea has become an increasingly important and difficult public health problem. Complicating factors are the increase in the number of cases of gonorrhea (494,945 reported in 1969 with an estimated 1,000,000 unreported cases[1]) and the increasing *in vitro* resistance of strains of *Neisseria gonorrhoeae*.[2] An additional problem is the occurrence of penicillin allergy in patients requiring therapy for gonorrhea. These problems have prompted the investigation of new antibiotics in the treatment of gonorrheal infections.

Before the reported efficacy of newer antibiotics such as the cephalosporins and kanamycin (Bristol), one used tetracycline or erythromycin (Eli Lilly) to treat resistant or recurrent cases of *Neisseria gonorrhoeae* infection. The success of Lucas and co-workers[3] in treating gonorrhea in male patients with a single intramuscular dose of two grams of cephaloridine (Eli Lilly), prompted the evaluation of the effectiveness of cephalexin (Eli Lilly), a new orally administered cephalosporin, in males with acute gonococcal urethritis.

Cephalexin monohydrate is the first oral cephalosporin antibiotic to produce high serum levels.[5] Clinical experience has shown this antibiotic to be effective in the treatment of soft tissue and urinary tract infections.[6-8] Since orally administered cephalexin gives serum levels comparable to those resulting from an intramuscular dose of cephaloridine,[9] it was reasonable to expect that this antibiotic might be effective in the treatment of gonorrhea.

Material and Methods

Thirty male patients with clinical evidence of gonococcal urethritis were selected for treatment with cephalexin monohydrate. The antibiotic was administered in a single oral dose of three grams, the total dose being swallowed under the supervision of the clinic physician. Before treatment, urethral cultures were obtained and the swabs streaked on Thayer-Martin agar. Bacteriologic confirmation was obtained by identification of colonies characteristic of *Neisseria gonorrhoeae* by oxidase testing and subsequently by fluorescent antibody staining techniques. Blood specimens were obtained from all patients included in the study for VDRL determination. Patients were asked to return 48 hours after administration of this antibiotic for clinical and bacteriologic follow-up. At this time, patients were interviewed to determine the existence of side effects from the antibiotic.

The strains of *Neisseria gonorrhoeae* obtained from patients in this study were tested for sensitivity to cephalexin by the disc-agar diffusion technique and by the test tube dilution technique employing Mueller-Hinton broth.

As a corollary to this study, blood and urine levels of cephalexin were determined in 12 volunteers following the administration of three grams of cephalexin by mouth in fasting

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Dr. Holloway is Director, Infectious Disease Research Laboratory, Wilmington Medical Center, Wilmington, Delaware and Dr. Taylor is Resident-in-Medicine, Wilmington Medical Center.

and feasting states. Serum levels were drawn at one-half, one, two, four, six and 12 hours after administration of the three-gram dose of antibiotic. In addition, all volunteers had complete blood counts, SMA-12 chemistry profile, and urinalysis carried out before and after administration of the three-gram dose of cephalexin. The serum levels for cephalexin were performed in the Eli Lilly Laboratory for Clinical Research, utilizing a cup plate microbiological assay with *Sarcina lutea* as the test organism.

Results

Ten of the 30 patients treated with cephalexin failed to return for follow-up examination. Twelve of the 20 patients who did return for follow-up were clinical and bacteriologic cures, while six of the patients were judged as failures by both clinical and bacteriologic parameters. Two additional patients were apparent bacteriologic cures but continued to complain of mild dysuria associated with a discharge. The clinical failures were subsequently treated with either 2.4 million units of procaine penicillin or twelve grams of tetracycline divided over a three-day period. There were no side effects noted during the study, and there were no positive tests for syphilis in the 30 patients from whom blood was drawn.

Cephalexin Serum Concentration

Serum levels following the ingestion of three grams of cephalexin in a fasting state in 12 volunteers were as follows: one-half hour 56.1 mcg/ml, one hour 77.6 mcg/ml, two hours 58.4 mcg/ml, four hours 14.5 mcg/ml, six hours 3.4 mcg/ml, 12 hours 0.3 mcg/ml. When the same volunteers were given three grams of cephalexin one hour following a meal, the serum levels were as follows: one-half hour 20.9 mcg/ml, one hour 59.9 mcg/ml, two hours 88.1 mcg/ml, four hours 27.8 mcg/ml, six hours 8.1 mcg/ml, and 12 hours 0.7 mcg/ml. These results suggest that administration of cephalexin in a feasting state delayed the peak level of cephalexin in the serum but did not lower the height of the final peak. These results disagree somewhat with those obtained by other investigators[10] who found that the peaks were lower and later. There were no side effects noted in the volunteer studies nor were there any changes noted in the pre- and posttreatment toxicity studies.

Sensitivity Studies

Seventeen strains of *Neisseria gonorrhoeae* obtained during the clinical trial survived subculture to undergo sensitivity testing. All of these strains were inhibited in the test tube by 0.4 to 3.1 mcg/ml of cephalexin. Disc sensitivities utilizing a 30 mcg disc showed zones of inhibition of 15-30 mm. Follow-up cultures obtained from the bacteriologic failures did not show evidence of increasing resistance to cephalexin.

Comment

Cephalexin, a new oral cephalosporin antibiotic, has been shown to be clinically effective in the treatment of urinary tract and soft tissue infections. It is readily absorbed from the gastrointestinal tract producing excellent blood and urine concentrations, and clinical experience to date has shown a low order of toxicity. The desirability of obtaining more oral agents effective in the treatment of gonorrhea when given in a single dose prompted the study of this agent in the treatment of acute gonococcal urethritis in male patients. A 30% failure rate was obtained in this limited study suggesting that a single three-gram dose of cephalexin is not a satisfactory alternative treatment for acute gonococcal urethritis. At the present time, studies are underway at our clinic to evaluate the use of a three-gram dose of cephalexin enhanced by a one-gram dose of probenecid in the treatment of male patients with acute gonococcal urethritis.

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RHOSLYN J. BISHOFF, M.D.

President, Medical Society of Delaware, 1970-1971

President's Page

LOOKING AHEAD

The new year for our Society begins with the challenges of the year just ended, a year of great progress in the Medical Society. New things were started: the Health Care Delivery Committee, the Peer Review Committee. A new Physicians' Participating Contract with Blue Cross-Blue Shield of Delaware, Inc. was sought and a task force formed with the responsibility of developing a plan for a foundation managed by the physicians of the Medical Society to offer medical services to the consumer public. The Public Laws Committee made great strides, resulting in a closer liaison with the State Legislature in Dover. For the ensuing year, it is only fitting that we try to consolidate our position in all of these new advances.

Two new fronts of Society involvement are now apparent, and attempts to make progress in improving liability insurance and in the drug scene are underway by forming committee responsibility in these areas. The Liability Insurance Committee must have one goal: establishment of a solid plan that is favorable to every member of the Medical Society, with safeguards against rising premium costs without disturbing existing plans before a new cooperative plan is finalized. There are aids to this goal through solid lines of communication with the State Insurance Commissioner, through possible association with a larger state such as Pennsylvania as a satellite to their liability insurance program, and through the AMA's interest in establishing a pilot study of liability insurance. Incidentally, one of the states to foster the AMA pilot study is Pennsylvania. The Liability Insurance Committee will be a separate committee responsible only to the Board of Trustees but able to turn to the Medical Economics and Medico-Legal Committees for additional information. The Drug Abuse Committee will have as its early business the advancement of the Medical Society's concern and willingness to aid in the struggle to help citizens drawn into the drug scene.

The newly named Board of Trustees will have umbrella-like responsibilities. What is implied by this "umbrella" is this: each member of the Board of Trustees, in the early organization of the Board, will be assigned several committees which will be his responsibility to improve. The meetings for the next eleven months of the Board of Trustees are herein listed.

December 10, 1970
January 14, 1971
February 25, 1971
April 1, 1971
May 13, 1971
July 8, 1971
September 9, 1971

This listing is made both for the members of the Board to be able to set aside time for attendance and to permit any physician of the Society an opportunity to make his desires known to his representative Trustee.

This year begins with one clear parliamentary defect. Our Society works on one-year terms only for each administration; although the Annual Meeting occurs in September or October, the new officers must wait until the following January to organize the Board of Trustees and this Board's Committees. Hence an appeal is being made here to all three component societies to make a change in their respective county societies that would elect new Trustees to take office at the moment the new President takes office.

At this time, we pledge to try to maintain the high standards established by our retiring president, Henry H. Stroud, and his administration.

Rhoslyn J Bishoff

In Brief

Rubella Vaccine Available

The Division of Physical Health has recently acquired a sufficient supply of the rubella virus vaccine to allow its distribution to the physicians of Delaware. This vaccine is distributed free of charge with the only stipulation on its use being that no charge be made for the antigen itself. A fee may, however, be assessed for its administration. Also available are the other standard childhood immunizing agents — measles, DPT, polio, and smallpox.

These vaccines are available through the local health units of the Division of Physical Health. When the vaccine is picked up, a card must be signed by the physician or his agent listing amount of vaccine dispensed and stating that no charge will be made for the vaccine per se.

If any questions arise concerning this procedure, you may contact your local health unit.

Supplies may be secured Monday through Friday from 8:00 a.m. to 4:30 p.m. from the following places:

City-County Health Office
1310 Delaware Avenue
Wilmington, Delaware 19806

Wilmington Health Unit
800 West Street
Wilmington, Delaware 19801

New Castle County Health Unit
3000 Newport Gap Pike
Wilmington, Delaware 19808

Kent County Health Unit
Federal & Water Streets
Dover, Delaware 19901

Middletown Health Unit
216 N. Broad Street
Middletown, Delaware 19709

Sussex County Health Unit
South Bedford Street Extension
Georgetown, Delaware 19947

Speakers on "Ask the Doctor"

Speakers for December, 1970, on the Tuesday radio program (11:05 a.m. WDEL) produced by the Medical Society of Delaware are: December 1, John H. Hanel, M.D., *Hospital Utilization under Medicare and Medicaid;* December 8, William V. Whitehorn, M.D., *Medical Education and Research;* December 15, Leslie W. Whitney, M.D., *Surgical Thyroid Disease;* December 22, John J. Egan, M.D., *The Blood Bank;* December 29, Richard J. Kester, M.D., *Psychiatric Treatment.*

In the News

The largest number of surgeons in the history of the College — 1,551 — were inducted as new Fellows of the American College of Surgeons. Delaware physicians receiving the honor on October 16 were: Amir Mansoory, M.D. and Shahrokh S. Morovati, M.D. of Newark and Davis G. Durham, M.D. of Wilmington.

Chest X-rays

The Delaware Tuberculosis and Health Society reports that the chest x-ray facility at 1308 Delaware Avenue, Wilmington, is for everyone, regardless of financial status. The service is open to the medically indigent, of course, since no payment is required, but it should not be assumed patients who can afford to pay for an x-ray should not come to the Society. All physicians are urged to refer their patients, regardless of financial status, to the TB Society when a chest x-ray is needed.

New AMA Guide

The 13th guide in the series, *Guides to the Evaluation of Permanent Impairment* developed by the Committee on Rating of Mental and Physical Impairment of the AMA is now available. It is entitled: *Guides to the Evaluation of Permanent Impairment — The Hematopoietic System.* A limited number of copies may be obtained, without charge, upon written request to the Committee on Rating of Mental and Physical Impairment, 535 North Dearborn Street, Chicago, Illinois, 60610.

Safety Concern

The Ortho Division of Chevron Chemical Company is advertising a different kind of medium in the JAMA. They are offering free distribution of the US government publication, *Directory, Poison Control Centers.* The message is headlined *This book won't cost you a cent. Not having it may cost you a life.* Write to: Chevron Chemical Company, 200 Bush Street, San Francisco, California, 94104. They'll send you a HEW directory of local phone numbers and addresses. It'll save you time and maybe patients.

Self-Assessment Program

A new opportunity for physicians to assess their own medical knowledge has been announced by the ACP. The questions will cover nine special areas of medicine — hematology, rheumatology, neurology, pulmonary disease, infectious disease and allergy, gastroenterology, renal disease and electrolytes, endocrinology and metabolic disease and cardiovascular disease. To take part in the 1971 program, physicians may write The American College of Physicians, Box MKSAP-II, 4200 Pine Street, Philadelphia, Pa., 19104. Cost of participation is $20 for ACP members and $40 for non-members.

CLINICAL MEETINGS AND NOTICES

Library Hours

The Academy of Medicine Library continues its twice-a-week evening hours which are now permanent. Library hours are Monday and Wednesday, 9 a.m. to 9 p.m., Tuesday, Thursday and Friday, 9 a.m. to 5 p.m.

Medical Aspects of Sports Seminar

The Division of Athletics, University of Delaware, in cooperation with the Medical Society of Delaware, will present current information, concepts, and techniques on the prevention and treatment of athletic injuries and the conditioning of athletes, on Saturday, January 23, 1971, at the Wilcastle Center of the University of Delaware, 2800 Pennsylvania Avenue, Wilmington. It is open to all team physicians, trainers, coaches, athletic directors, student trainers, nurses, and others in the field of physical education from universities, colleges, community colleges, public, private, and parochial secondary schools, and agencies involved with physical education programs. The fee, $20 per person, includes instruction, seminar materials and lunch. Register in advance before January 15, 1971.

CLASSIFIED AD SECTION

Advertisements under the Classified Ad Section are charged at the rate of 30 words or less, set solid. One insertion $4.00. Call the Journal office, 658-7596 for placement. All advertisements are payable in advance. The Editorial Board reserves the right to edit copy. Closing date for new copy is the first of the month for inclusion in the current issue.

Classified advertisements of a professional nature are free to members.

FOR RENT: Vacation in Jamaica, W.I., north coast. Three bedroom cottage, 300 yards from beach, air conditioned with maid-cook. Three couples or family of six accommodated. Write: Bertie Griffiths, M.D., Dept. of Microbiology, University Hospital, Kingston 7, Jamaica, W.I.

BLUE CROSS® and BLUE SHIELD® of DELAWARE
INCORPORATED
PROFESSIONAL NEWSLETTE

DIRECT-PAY NEWS

NOW ELIGIBLE DELAWAREANS CAN APPLY ANYTIME

YEAR-ROUND ENROLLMENT PLAN

Blue Cross and Blue Shield of Delaware is now offering prospective members in the Direct-Pay category the opportunity for new membership the year-round. In the past, enrollment opportunities were announced at a specific one week period during the year. Over seventy percent of all Delawareans are Blue Cross and Blue Shield members. Eligible residents who are not members do not have to wait for announced "Join Week" periods, but can request an application for membership at any time.

WHO IS ELIGIBLE?

To be eligible for the new Direct-Pay (Non-Group) membership the applicant and spouse must be Delaware residents under 65 years of age and in good health. The applicant may be self-employed or employed where there are less than ten full-time workers. Finally, the prospective member must not have other hospitalization or surgical-medical coverage.

AVAILABLE COVERAGE FOR DIRECT-PAY

There are several plans available to applicants on a Direct-Pay, Non-Group basis — combinations of Blue Cross, Blue Shield, and Extended Benefits.

All applications are subject to acceptance by the Underwriting Department.

OVER AGE 65?

Delawareans who are over 65 years of age and eligible for Medicare may apply within 60 days of their 65th birthday for membership in the Blue Cross and Blue Shield series of programs known as DELAWARE — 65.

FOR STUDENTS

Full time students (residents or non-residents of Delaware) under age 25 attending approved institutions in Delaware may apply for enrollment in a Student program within 60 days of registration as a student. To be eligible, these students must be in good health and not have other hospitalization insurance, and cannot be employed on a regular full-time basis.

INFORMING THE PUBLIC

It may be helpful to inform relatives and friends who are not members and who are not eligible for group membership to write any Plan office for an application.

201 West 14th Street, Wilmington, Delaware 19899

Delaware Medical Journal

DECEMBER, 1970

VOLUME 42

NUMBER 12

BRAIN ABSCESS: A WORLD RECORD?

• A patient is presented who developed a brain abscess secondary to a penetrating skull injury 51 years previously. As far as we have been able to ascertain, this is a world's record and indicates there is no time limit for abscess formation consequent to penetrating head injuries.

Beresford M. Swan, M.D.

Case Report

The theoretical duration of abscess formation after penetrating missile wounds to the head would appear limited only by normal human life expectancy. What seems to be a record-breaking temporal relationship between head injury and the sequelae of abscess formation is herein presented. This report concerns a patient who sustained a bullet wound in 1919, the social saga pertaining thereto, and the definitive surgical treatment a record-breaking 51 years later.

Case Presentation

A 68-year-old woman was admitted to the Delaware Division of the Wilmington Medical Center on February 2, 1970, complaining of headaches, unexplained fever, and swelling of the occipital region.

The present illness dated back to 1919 in Arkansas when she was accidentally shot by a caliber .38 bullet. Neurosurgeons were not available in her state at that time, and the only treatment she received was local care of the entrance wound and removal of the bullet at the exit wound.

Her residual disability was a left hemiparesis. Over the following three years she also suffered two seizures. After the second seizure she was admitted to a hospital in Tennessee, and exploration of the entrance wound was performed by a general surgeon.

She did quite well until 1946 when she was admitted to a hospital in Pennsylvania with complaints of headaches, fever, and tenderness of the right occiput. Thorough evaluation was performed, and it was elected to treat her symptomatically.

In 1967 she sustained a minor head injury, striking her head on the roof of her car, after applying power brakes. Since that occasion she had suffered five similar episodes of fever, headaches, and swelling of the occiput, each episode being treated with penicillin and analgesics. During her last illness she did not respond to these measures and was admitted to the hospital.

Dr. Swan, formerly Senior Resident in Medicine at the Wilmington Medical Center, is presently in private practice in Hamilton, Bermuda.

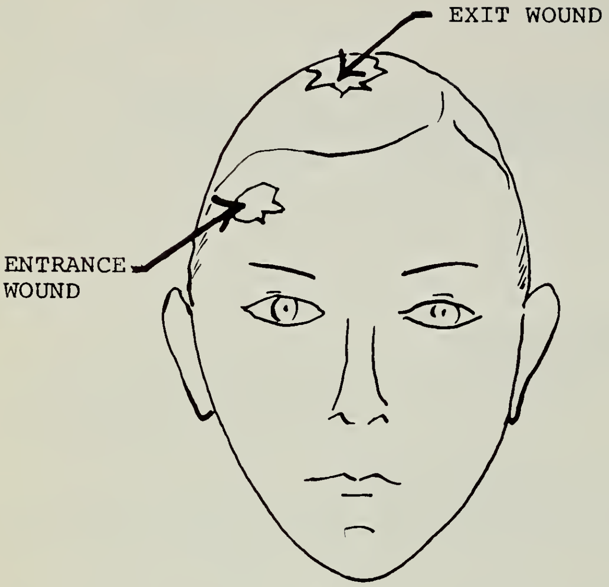

Figure 1

A-P view of bullet tract injury sustained September 1919.

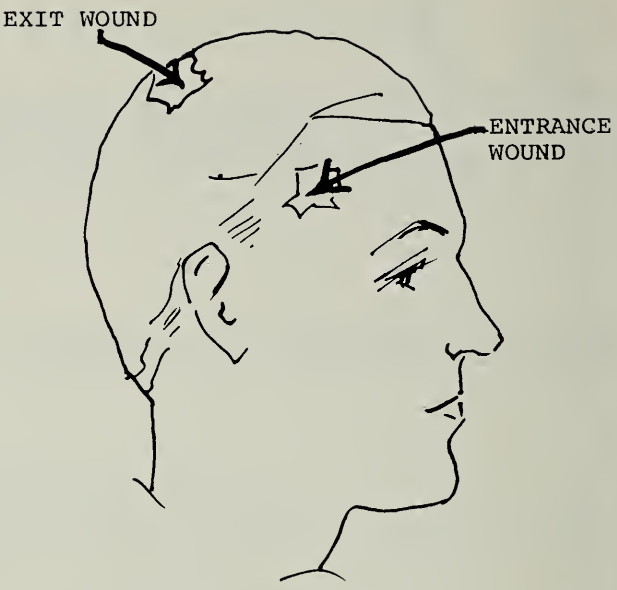

Figure 2

Social History

In view of the extent of her injury in 1919 (Figures 1 and 2) it was remarkable that the patient was able to accomplish so much throughout life.

She was married three times and survived all three husbands. Much of her work throughout life was classified in nature and cannot be divulged. She received numerous awards and citations from various organizations, and heads of states, in this country, as well as foreign countries.

Laboratory Data

The pertinent physical examination on admission revealed an alert, well-developed female in moderate distress.

Her temperature was 102°F. B.P. was 130/80 mm/Hg. Pulse was 100. The neurologic examination revealed a left hemiparetic gait, and mild weakness of the left upper and lower extremities. There were swelling and marked tenderness and heat of the right occiput. There were two defects in the skull. One on the right temporal area was smooth and approximately 3 cm in diameter with pulsatile non-tender brain palpable below it. Another defect was found over the right occiput and was jagged and irregular. The brain below did not pulsate. This area was fluctuant. (Figures 1 and 2)

Spinal Tap: pressure normal; glucose 40% and protein 100 mg/100 ml. WBC 2,450/cu mm with 75% polymorphonuclears (PMN) and 25% lymphocytes. India ink preparation, acid fast stain and Gram stain on the spinal fluid were all negative. Spinal fluid culture was negative up to eight weeks of culture.

White blood count was 11,500 with 75% PMN. Skull x-ray showed an oval surgical defect in the anterior portion of the right parietal bone and an irregular defect between the occipital and parietal bone with numerous metallic bullet fragments located along the inner table at the posterior edge of the bony defect, as well as small metallic fragments along the bullet tract from entrance to exit. There was no evidence of osteomyelitis on the skull x-ray.

Recti-linear brain scan was abnormal and showed a well defined 2 cm increase in the right occipital area. The electro-encephalogram was abnormal due to right sided slowing

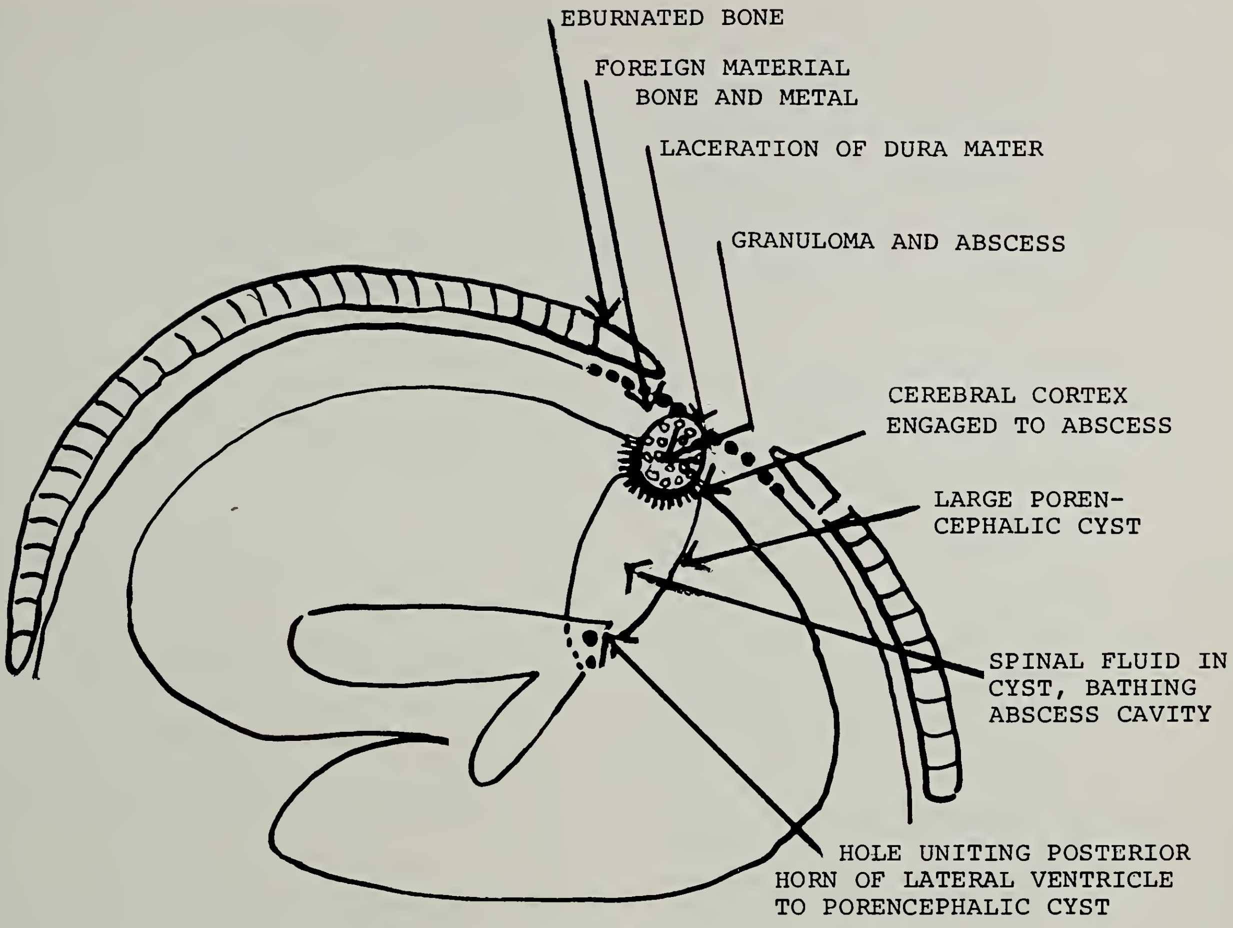
EBURNATED BONE
FOREIGN MATERIAL BONE AND METAL
LACERATION OF DURA MATER
GRANULOMA AND ABSCESS
CEREBRAL CORTEX ENGAGED TO ABSCESS
LARGE PORENCEPHALIC CYST
SPINAL FLUID IN CYST, BATHING ABSCESS CAVITY
HOLE UNITING POSTERIOR HORN OF LATERAL VENTRICLE TO PORENCEPHALIC CYST

Figure 3: Neuro-Surgical Findings and Procedure

1. Granuloma + abscess + dura mater removed en block.
2. Fascia used to close porencephalic cyst and dura mater.
3. Acrylic plate planned for the bony defect in the future.

as well as increased sharp discharges from the central and centro-parietal region.

The echo-encephalogram was abnormal using the B mode. It showed a shift of the mid brain of 8 mm from right to left.

Right brachial arteriogram was normal.

Hospital Course

The patient was started on massive doses of intravenous penicillin because of the pleocytosis of her spinal fluid, and headache and fever. She received 10,000,000 units during the first 24 hours without any improvement. The marked tenderness of the scalp continued. Because of failure to improve and lack of culture of organisms from her spinal fluid, her antibiotic was switched to lincomycin, the presumption being that she had osteomyelitis or an extradural abscess. She received 1.2 grams of lincomycin intravenously every four hours for two days and then was changed to 600 mg intra-muscularly every six hours for six days. Because of severe diarrhea she was switched to 7-chloro-lincomycin 150 mgs every eight hours by mouth for ten days. She did extremely well on the above regimen, became afebrile 24 hours after lincomycin was begun, and remained afebrile throughout her hospital stay. On the 18th hospital day the patient underwent an exploratory craniotomy.

Operative Findings

A complete exploration from the exit to the entrance of the bullet tract was performed with removal of foreign metallic fragments and excision of inflammatory tissue. (Figure 3) The granuloma and abscess and dura mater were removed en bloc. Fascia was used to close the porencephalic cyst and dura mater.

Microscopic examination of the surgical specimen revealed chronic brain abscess and foreign body granulomatous inflammation of the brain and dura matter. No organisms were cultured nor seen on section.

Postoperatively, the patient did exceedingly well and walked out of the hospital, her mild hemiparesis unchanged. It is planned to place an acrylic plate in the large bony defect in the future.

Discussion

The late development of brain abscess in relation to retained intracranial foreign bodies is not an uncommon occurrence. An excellent review of this condition was presented by Drew and Fager.[1] In the case presented here, it is clear that the initial gunshot 51 years previously produced brain damage with tissue destruction, scar formation, and a porencephalic cyst. This, combined with the penetration of the dura and the metallic foreign bodies, provided a fertile soil for the development of a chronic brain abscess. The same circumstances appear to be the common factors in the cases of delayed brain abscess following trauma reported previously in a collective review by Grant,[2] ie, penetrating injuries, laceration of the dura, scar formation, and retained metallic foreign bodies.

The latency period between penetrating wounds and the late development of brain abscess can be quite variable, and the interval has been noted by Oppenheim[3] to be from ten to thirty years.

A case exceeding this interval has been reported by Robinson et al.[4] In their case an unrecognized depressed skull fracture was the cause of a fatal brain abscess 36 years later. In reviewing the literature, the case presented by Nauwerck[5] was the longest on record. His report involved a fatal abscess that developed around a retained bullet in the frontal lobe 38 years after the initial injury.

The late development of a brain abscess in many instances is a fatal affair. A point of therapy important enough to be repeated was made by Grant[6] who said, "A patient who has had a penetrating brain wound and apparently been in perfect health for a number of years may suddenly develop an intense headache, become rapidly stuporous and die within twenty-four hours from rupture of a latent abscess into the ventricle and fulminating meningitis." It would seem prudent to consider that every patient with a foreign body in his brain from a penetrating wound, be it decades or a half century remote, may have a brain abscess, and any symptom or sign referable thereto should be investigated vigorously to rule out an abscess.

Summary

A case of delayed brain abscess of 51 years' duration is presented in detail. It is clear that there is no time limit to the sequelae of late brain abscess following penetrating wounds of the brain with retained foreign matter.

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PERSONAL CREED

Spiritual power is a force which history clearly teaches has been the greatest force in the development of men. Yet we have been merely playing with it, and never have really studied it as we have the physical forces.

Charles P. Steinmetz

PROCEEDINGS OF THE HOUSE OF DELEGATES, 1970

MEDICAL SOCIETY OF DELAWARE

The 181st Annual Session of the House of Delegates, Medical Society of Delaware, was called to order at the University and Whist Club, 805 N. Broom Street, Wilmington, Delaware, on Friday, October 16, 1970, at 4:30 P.M., Henry H. Stroud, President, presiding.

Secretary Abbiss took the roll call and a quorum was declared.

A motion was made, seconded, and approved to accept the minutes of the 1969 Session as published in the Delaware Medical Journal.

(All reports were accepted as published.)

REPORTS OF THE OFFICERS

REPORT OF THE SECRETARY

Ninety-eight meetings including today's meeting were held during this past year. Eight meetings were devoted to the transaction of business matters by the Council; in addition, there were 87 committee meetings, for which preparations were made by the Society office, and two meetings open to all Society members. The dinner-dance will be held October 17 at the Wilmington Country Club. All business transacted by the Society has been recorded in the minutes as presented by the Secretary.

The total membership as of October 1 is as follows:

1970

	Members	Dues Exempt Members	Total
Kent	36	4	40
New Castle	375	46	421
Sussex	57	7	64
			525

1969

	Members	Dues Exempt Members	Total
Kent	35	2	37
New Castle	362	49	411
Sussex	55	9	64
			512

Joseph W. Abbiss, M.D., *Secretary*

REPORT OF THE TREASURER

The report of the Treasurer for 1969-1970 is in two sections. The first consists of a statement of income and expenses for the twelve months of calendar 1969. This has been prepared by Haggerty and Haggerty, certified public accountants, and is presented with some condensation from their 1969 audit of the Society's accounts.

The second section is a statement of income and expenses for the first nine months of 1970. This is not audited at the moment, since it is an interim report. The audit for 1970 will be done at the end of this calendar year.

PART I

STATEMENT OF INCOME AND EXPENSES

CALENDAR 1969

Bank Balance Checking Account — December 31, 1968		$ 2,158.56
OPERATING RECEIPTS		40,384.83
CONTRA RECEIPTS	$33,239.50	
CONTRA DISBURSEMENTS	31,818.00	
Balance from Contra Funds held in account		+1,421.50
TOTAL OPERATING RECEIPTS		$41,806.33
Sale of Treasury Bills		+6,994.00
Transfer of $9,355.00 — (for Interest Purposes)		+9,355.00
OPERATING DISBURSEMENTS		
Personnel, Employee Taxes, Hospitalization		24,934.11
Office Operation		6,587.00
Insurance		237.00
Travel and Expenses		2,323.29
Annual Meeting		6,750.21
Subscriptions, Contributions, Dues		646 50
Operation of Committees		1,934.70
Abortion Survey, Coroners		327.15
TOTAL DISBURSEMENTS		$43,739.96
Reimbursable Expense	$2,877.33	
Reimbursed Expense	$4,910.13	+$ 2,032.80
Transfer of $10,000 for Interest Purposes		—$10,000.00
Balance Checking Account — December 31, 1969		$ 8,606.73

ASSETS

Investments		
Stock	$25,023.70	
U.S. Treasury Bills	6,648.09	
		$31,671.79
Savings Accounts		
Wilmington Savings Fund Society	$ 7,902.40	
Artisans	14,167.09	
		$22,069.49
Checking Accounts — December 31, 1969		$ 8,606.73
TOTAL ASSETS		$62,348.01

PART II

INTERIM TREASURER'S REPORT OCTOBER 1, 1970

	Budgeted	Actual	
Bank Balance Checking Account— December 31, 1969			$ 8,606.73
Operating Receipts			
Dues	$35,490	$35,382.50	
Dividends & Interest	4,350	2,402.64	
Miscellaneous		62.98	
TOTAL RECEIPTS			$37,848.12
Operating Disbursements			
Salaries	$22,650	$17,561.77	
Employer Taxes & Employee Benefits	1,425	2,628.65	
Office Operation			
Contribution to Academy	2,500	2,500.00	
Printing, Postage, Stationery	1,862	1,514.16	
Telephone-Telegrams	1,200	844.75	
Audit & Insurance	275	398.00	
Office Supplies	1,163	1,419.02	
Travel			
AMA Delegate	$ 1,100	$ 840.35	
Contingency & Pres. Elect	2,800	3,318.35	
Subscriptions, Contributions, Dues, Blood Bank	630	749.00	
Committees & Contingency Fund	2,050	2,109.26	
Miscellaneous		73.50	
Campaign for AMA Vice Pres.		2,555.44	
	$37,655		
TOTAL DISBURSEMENTS			$36,512.25
Reimbursable		$ 4,351.48	
Reimbursed		$ 1,295.03	—$ 3,056.45
Contra Receipts			$38,785.05
Contra Disbursements			$35,820.09
Balance from Contra Funds held in account			+$ 2,964.96
Transfer of Funds to Artisans' Savings Account for Interest Purposes			—$10,000.00
Transfer of Funds from Artisans' Savings Account to Regular Account			+$10,000.00
Balance Checking Account— October 1, 1970			$ 9,851.11

Conley L. Edwards, M.D., ***Treasurer***

REPORTS OF THE STANDING COMMITTEES

BUDGET COMMITTEE

The Budget Committee of the State Medical Society met on September 16, 1970 and all members were aware of the increasing cost associated with maintaining facilities, inventories and supplies, rising insurance rates, and the necessary salary adjustments because of the rising cost of living, secondary to our inflationary time.

The members of the Committee recognized the increasing activity of the staff and the increasing activity of the committees of the Society. This increasing activity on the part of the Society leads to more demand for support upon the contingency fund, and indirectly over the activities of the administrative staff in that it requires more attention from the administrative personnel and the requirements for supplies and related office equipment utilization. This is indeed encouraging.

It was recommended by the Budget Committee that the Contingency Fund be increased approximately $1,000.00 and that funds be made available to each committee upon request at the discretion of the Council and with no funds budgeted for any particular committee. The Woman's Auxiliary of the Medical Society of Delaware had asked for financial support and it was the opinion of the committee that the auxiliary be encouraged to adapt to financial independence.

It was noted that salary adjustments had not been made for the administrative staff since July of 1969, and in order to maintain the fine administrative personnel that the Society enjoys, that a percentage cost of living increase be entertained by the Medical Council. The percentage increase would be based upon the cost of living index as furnished by actual factual changes that have occurred since July 1969.

Recognizing with favor the increasing activities of staff, officers, committees and the requirements for staff and the other indirect increasing costs, it was the Budget Committee's recommendation that rather than raising dues, the necessary funds be removed from the reserve for these adjustments. Based on these factors, it was the feeling that our budget would require increased funds. The reserve fund was felt to be adequate for this purpose during the coming year.

BUDGET

OPERATING RECEIPTS			
Addressograph			$ 200
Dues			37,209
Dividends & Interest			5,437
(From Reserve)			3,154
TOTAL RECEIPTS			$46,000
CONTRA RECEIPTS			
AMA Dues		$44,660	
AMA Dues Rebate		446	
Scholarships		2,355	
DMJ Subscription		2,900	
Annual Meeting			
Grants	$1,550		
Exhibits	2,850		
Banquet Ticket Sale	3,000	7,400	
TOTAL		$57,761	
CONTRA DISBURSEMENTS			
AMA Dues		$44,600	
AMA Dues Rebate		446	
Scholarships		2,355	
DMJ Subscription		2,900	
Annual Meeting		7,400	
TOTAL		$57,761	
OPERATING DISBURSEMENTS			
Employee Benefits			$ 1,996
Salaries			24,140
Employer Taxes			1,575
Hospitalization			890
Office Operation			
Contribution to Academy		$ 2,500	
Printing, Postage, Stationery		2,000	
Telephone-Telegrams		1,200	
Audit		300	
Office (including part-time office help)		2,460	
Insurance		270	8,730
TRAVEL			
AMA Delegate		1,000	
Contingency (Officers-Staff)		3,216	4,216
SUBSCRIPTIONS, CONTRIBUTIONS, DUES			
Delaware Public Health Assn.		3	
Blood Bank		220	
AMA-Aces and Deuces		50	
Delaware Better Business Bureau		50	
Medical Society Executive Assn.		30	
Delaware State Chamber of Commerce		75	
Presidents and Presidents-Elect		25	
Contributions-Contingency		100	553
Committees and Contingency Fund			3,000
TOTAL DISBURSEMENTS			$46,000

C. L. Edwards, M.D., *Chairman*
A. E. Bacon, Jr., M.D.
J. A. J. Forest, Jr., M.D.
L. Katzenstein, M.D.
E. L. Stambaugh, M.D.
C. Walker, Jr., M.D.

PROGRAM COMMITTEE

The printed program reflects the achievements of the Program Committee.

H. Thomas McGuire, M.D., *Chairman*
A. E. Bacon, Jr., M.D.
C. L. Minor, M.D.
W. Omans, M.D.
S. W. Rennie, M.D.
H. Rosenblum, M.D.

COMMITTEE ON PUBLIC LAWS

The report of the Public Laws Committee can largely be found in the President's Page published in the *Delaware Medical Journal* of May, 1970. Since the publication of that report, the principal problem before the Committee was the remarkably effective campaign put on by the chiropractors of the state to have passed legislation which would permit them to qualify for payments under Title 19 and Blue Shield. The bills which the chiropractors were backing died, perhaps partly as the result of activities of the members of this Committee. The Chairman would like to take this opportunity to thank Gerald Savage, M.D., James B. McClements, M.D., Peter Mette, M.D. and Vincent Lobo, D.O. as well as the indefatigable Rhoslyn Bishoff, M.D., who gave of their time to appear before the Legislature on behalf of this Society.

Finally, the efforts of Mrs. Anne Shane and Mrs. Henrietta Moore of our staff should not go unappreciated by the members of the Society.

Allston J. Morris, M.D., *Chairman*
J. W. Alden, Jr., M.D.
J. E. Belgrade, M.D.
R. J. Bishoff, M.D.
N. L. Cannon, M.D.
R. C. Corbalis, M.D.
K. M. Corrin, Jr., M.D.
E. S. Dennis, M.D.
C. R. Donoho, M.D.
C. E. Graybeal, M.D.
A. Z. Hameli, M.D.
C. B. Hearne, M.D.
F. I. Hudson, M.D.
L. P. Lang, M.D.
G. J. Savage, M.D.
M. J. McKusick, M.D.

PUBLICATIONS COMMITTEE

During this past year the Journal continued its established policy of printing whenever possible, in addition to clinical material of all varieties, material of contemporary medico-social importance. To our pleasure, several of our editorials and papers on this type subject have been reprinted in the Wilmington newspapers or used as a basis of newspaper editorials. In addition, one of our President's Pages was reprinted in the AMA News.

A new feature which we hope to encourage is the reproduction of photographs or other art works by Society members. We have also reinstituted the custom of printing pictures and short biographical sketches of new members.

Current innovative plans include publishing in a special issue the papers presented at the 1970 Infectious Disease Symposium.

Special thanks go to Doctor Lloyd Harrison, who has faithfully continued the onerous duty of providing obituaries as deaths occur. During the past year, Doctor Arthur Zimmerman has left the Editorial Board and Doctors Daniel Alvarez, C. E. Graybeal, and William D. Johnson have been welcomed to its ranks. We also acknowledge with appreciation the service of our Editorial Board who have evaluated all submitted manuscripts. They are, in addition to those named, Charles Allen, M.D., John H. Furlong, M.D., Carl I. Glassman, M.D., Albert L. Ingram, Jr., M.D., Leonard P. Lang, M.D., Charles L. Reese, III, M.D., Stuart W. Rose, M.D. and Herman Rosenblum, M.D.

Doctor Davis Durham has continued to provide excellent and so-necessary financial advice. Mrs. Anne Shane, Mrs. Henrietta Moore, Mrs. Melita Phillips, and Mrs. Louise Dundon have been meticulous and devoted in the performance of the numerous complicated and sometimes tedious details of preparing each issue for publication.

Robert B. Flinn, M.D., ***Chairman***
J. W. Abbiss, M.D.
D. G. Durham, M.D.
W. J. Holloway, M.D.
K. K. Kimura, M.D.
B. Z. Paulshock, M.D.

DELAWARE MEDICAL JOURNAL

Statement of Receipts and Disbursements

	Year Ended Dec. 31 1969	Jan. 1-Oct. 1 1970
Total Receipts	$29,932.99	$19,331.41
Total Disbursements	$28,804.32	$18,897.35
Excess revenue over expenditure	$ 1,128.67	$ 434.06
Savings Account	$ 7,252.36	$ 7,599.85
Due to General Fund	$ 5,000.00	$ 5,000.00

Anne E. Shane, ***Business Manager***

REPORT OF THE PHYSICIAN MEMBERS OF THE BOARD OF TRUSTEES OF BLUE CROSS AND BLUE SHIELD OF DELAWARE, INC.

The physician trustees are: James M. Chase, M.D., Conley L. Edwards, M.D., Alfred Lazarus, M.D., John M. Levinson, M.D., Robert F. Lewis, M.D., H. T. McGuire, M.D.

H. Thomas McGuire, M.D. serves as a member of the Executive Committee. Conley Edwards, M.D., serves as a member of the Finance Committee. H. Thomas McGuire, M.D. also serves as a Director of the National Association of Blue Shield Plans, representing District IV Plans.

After 35 years as managing director of Blue Cross and Blue Shield of Delaware, Inc., Mr. Harold V. Maybee retired on February 1, 1970. Effective this date, Mr. Courtney H. Taber was appointed as managing director of the Plan.

In February of 1970, the Board of Trustees agreed that a new participating agreement, with participation options, should be developed to combine into one document physician participation in the Prevailing Fee Programs and the Blue Shield Indemnity Programs, which are now contained in two separate documents. Such a change would make the Prevailing Fee Program a basic part of each participating physician's agreement, which is important since Plan enrollment is increasingly shifting to surgical-medical coverage under Prevailing Fee Programs, now that they are available to the community through the Standard-80 and Comprehensive-80 Blue Shield plans which were introduced in November of 1969.

Throughout the year, at practically every Claims Committee, Executive Committee and Board meeting, reports and discussions were held on the progress of the development and negotiation of the new participating agreement with the Prepayment Committee of the Medical Society of Delaware.

At the Board of Trustees meeting held on September 28, 1970, the last recommended changes made by the Prepayment Committee were discussed in detail and approved by the Plan trustees. After the final document is approved by the Council of the Medical Society of Delaware, it will be printed and distributed to the physicians of Delaware this fall for their individual approval and acceptance for participation in the Delaware Blue Shield Plan.

During the year, the Plan staff continued its implementation of the new participating hospital contract, which was approved in 1969. One additional hospital was added to participating status, the Alfred I. duPont Institute, in that the Institute changed its policy and began to bill all patients for services rendered there.

A discussion was held in the Board meeting concerning the development of prepaid group practice, both in Delaware and on a national basis, which was prompted by the increasing stress being placed on this area of health care delivery in practically every national organization. The Plan staff stressed the importance of prepaid group practice and predicted its growth in Delaware because it seems to offer greater efficiencies and economies than are offered in the present health care delivery system. The Board requested the staff to report on the progress of prepaid group practice on a regular basis.

In August, Doctor Levinson presented an informative report on maternity services in Delaware, in which he stressed the significant increase in the number of abortions that are being performed in the State with the expectation that additional increases will take place in the future. These increases result from the change in the Delaware Law, effective in June of 1969, and the change in the public awareness of the availability of such services.

The Delaware Plan, as fiscal intermediary for Title XIX, the Medicaid Program, and Part A of Medicare and carrier for Part B of Medicare, has experienced a considerable change in the Plan work load, necessitating expansion of personnel. The Government programs have also increased the complexity of medical-surgical coverage. The Prepayment and Medical Review Committees appointed by the Medical Society of Delaware have assisted the Plan in helping to define medical practice, review unusual physician services, as well as unusual claims.

During the past year, the Plan has maintained its high level of membership under both Blue Cross and Blue Shield with an increase in both areas. As of September 1, 1970, there were 393,910 Blue Cross members, 366,504 Blue Shield members. There are 321,589 of the above members covered under the Extended Benefits Program and 20,032 covered under the Out-of-Hospital Prescription Drug Program.

Approximately 80% of the population of Delaware is now enrolled in the Delaware Blue Shield Plan or is being served by the Plan under Medicare and Medicaid.

The Blue Shield membership is broken down as follows: 34% Standard Coverage; 47% 80% Coverage; 11% 100% Coverage and 8% Over-65 Complementary Coverage.

H. Thomas McGuire, M.D., ***Senior Member***

THE AMA DELEGATE

At the 23rd Clinical Convention held in Denver, November 30 — December 3, 1969 the House of Delegates endorsed proposals to increase physician services in urban slum areas: 1) a volunteer physician recruitment program for service in areas of need; 2) amending draft law to allow physicians to serve in areas of critical need as an alternative to military service; 3) support of medical school scholarships for disadvantaged students.

November 30—December 3, 1969, the House of

The House approved policy proposals aimed at establishing a committee on Long-Range Planning and Development. An Ad Hoc Committee was approved which was charged with receiving the Himler and minority reports and then presenting recommendations for the structuring of a permanent Long-Range Planning and Development Committee at the June 1970 meeting in Chicago.

The House approved discontinuation of the Institute for Biomedical Research.

The House adopted a comprehensive progress report of the Board of Trustees in its efforts "to study and search for solutions to the problems of medical professional liability, including containment of costs, availability of adequate insurance for all competent and ethical physicians, and possible legislative remedies."

The House adopted a new policy statement on marijuana: "Cannabis is a dangerous drug and as such is a public health concern. The sale and possession of marijuana should not be legalized. The handling of offenders should be individualized. Additional research on marijuana should be encouraged. The AMA should continue its educational programs to all segments of the population with respect to the use of marijuana."

The House established a Committee on Private Practice to encourage and promote the private practice of medicine.

In its first uninterrupted Annual Convention since 1967, the House of Delegates at the 119th Annual Convention June 21-25, 1970, considered a record volume of business, raised membership dues to $110 to help finance needed programs and passed a hotly debated statement on abortion.

Wesley W. Hall, Nevada, was elected President-Elect, and will become the 126th President of the AMA in June, 1971. Walter C. Bornemeier, M.D. assumed the Presidency.

H. Thomas McGuire, Delaware was elected Vice President and Russell B. Roth, Pennsylvania, and J. Frank Walker, Georgia, were unanimously re-elected to their posts as Speaker and Vice Speaker of the House, respectively.

After long debate before the Reference Committee and on the floor of the House, delegates adopted the following resolution on abortion:

> "That abortion is a medical procedure and should be performed only by a duly licensed physician and surgeon in an accredited hospital acting only in conformance with standards of good medical practice, and after consultation with two other physicians chosen because of their professional

competence, and within the Medical Practice Act of his State; that no physician or other professional personnel shall be compelled to perform any act which violates his good medical judgment. Neither physician, hospital, nor hospital personnel shall be required to perform any act violative of personally held moral principles. In these circumstances, good medical practice requires only that the physician or other professional personnel withdraw from the case so long as the withdrawal is consistent with good medical practice."

For the first time in its history, the House appointed a special reference committee to hold a public forum, at which individuals and representatives of groups could present their views of medical and health care. The committee heard three hours of testimony on the opening day of the convention.

A standing committee of the House, the Council on Long-Range Planning and Development, was created, and the by-laws were changed appropriately to accommodate it.

The Council will submit reports to the House at each regularly scheduled convention of the AMA.

The following recommendations were some of those adopted by the House, sometimes after extensive revision:

That the AMA reaffirm, as a statement of the primary purpose and responsibility of the Association and the medical profession, "the promotion of the art and science of medicine and the betterment of public health," and, as part of this purpose, apply all possible effort to make medical services of high quality available to all individuals.

That the American Medical Association recognize the need for multiple methods of delivering medical services, and that it encourage and participate in efforts to develop them.

That the AMA expand its active role in planning and developing programs for medical care in all of its ramifications and that it encourage and assist State and County Medical Societies to do the same at their respective levels.

That the AMA and the constituent and component medical societies seek the active cooperation of all physicians, both as individuals and as members of medical staffs, in medical service projects for areas in need of medical services.

That an appropriate committee of the AMA immediately begin to formulate a policy on physicians' assistants, particularly with regard to their responsibilities, limitations on their services, and supervision of their services by qualified physicians.

That the AMA approve in principle certification of educational programs for physicians' assistants but oppose licensing of these individuals by any state agency.

Endorse the principle of voluntary, life-long post-graduate study for all physicians and continue and accelerate the development of programs and incentives for such study.

The Professional Liability Committee of the Board is seeking with the insurance industry a means for instituting qualified liability insurance programs under such joint sponsorship with state associations which elect to participate.

The House took a number of important actions in connection with drugs. Among them: That it is contrary to the public interest to repeal or modify "anti-substitution laws and regulations in order to permit the filling of prescriptions with therapeutic agents not intended by the prescribing physician." The House declared its intention "vigorously to support the maintenance and enforcement of anti-substitution laws and regulations."

The House resolved to "support continuing efforts by the American Medical Association to inform the medical profession of the value and benefit to be realized from the implementation of adequate peer review programs" and directed the Board, the Council on Medical Service and "other appropriate sections of the AMA" to give this project the "highest priority and emphasize its urgency to all state and component medical societies."

Mindful of its obligation to protect public health, the House called on each state society "to take whatever steps are necessary to inform state legislators about the health hazards posed by the cult of chiropractic."

H. Thomas McGuire, M.D., ***Delegate***

DELAWARE ACADEMY OF MEDICINE

Following are the activities the Academy has involved itself with during the last year in its continuing effort to expand its usefulness to the Medical-Dental community and the community at large.

1) Auditorium remodeled and new audio-visual system installed.
2) Academy co-sponsor of the First Warren Lecture — December 5, 1969.
3) Academy co-sponsor of the Infectious Disease Symposium — May 6-8, 1970.
4) Annual Lectureship of the Academy delivered by Doctor Graham B. Blaine, Jr., of Harvard University. Subject: "The Student Unrest"
5) Continued increase in the use of the Library. The trial twice-a-week evening hours now permanent library hours — Monday and Wednesday 9 a.m. to 9 p.m., Tuesday, Thursday and Friday 9 a.m. to 5 p.m.

Norman L. Cannon, M.D., ***Representative***

REPORTS OF SPECIAL COMMITTEES

WOMAN'S AUXILIARY TO THE MEDICAL SOCIETY OF DELAWARE

The Woman's Auxiliary to the Medical Society of Delaware has continued its efforts to benefit the doctors of our State.

Under the leadership of Mrs. Leslie Whitney, as President from October 1969 to April 1970, much was accomplished. In particular, a Workshop for Mental Health Volunteers was a first for the Auxiliary. This all day meeting was organized by the very capable Mrs. Albert Ingram, wife of the then Commissioner of Mental Health. The program was aimed at interesting more people in helping with the Department of Mental Health. It was shown by demonstration of several programs, that many types of volunteers were needed, from the aides for retarded children, to supervision for outpatient care, and half-way house-type care.

Along the same avenue of thought, pamphlets called Milestones to Maturity were distributed throughout the state to all 8th graders. It is interesting to note that when this program was carried out five years ago the pamphlets were distributed to 11th graders. The Board felt this year that they would be more effective at a lower grade level because of the more liberal coverage of T.V. programs, movies, and certain fiction.

The New Castle County Auxiliary prints a newsletter called the *Auxiliary Chatter* in which pertinent information from their county and other areas of the state is aired.

One group of women conducted *Operation Handclasp*. This was an attempt to entertain Wilmington hospital staff and their families. The Board did decide that these doctors would probably be more interested in getting to know established physicians in their own fields rather than meeting in one large group.

The Vision Testing Program for Amblyopia continues in New Castle County. Over 2000 pre-school children were checked last year. In this field of Community Health, there was also a request from the American Cancer Society for help with a telephone survey on smoking.

The Health Careers Committee, one of the most important projects the Auxiliary carries on, was able to award 21 women partial scholarships for nursing careers. The amount of money raised last year was $3650.00. In previous years there has been as much as $6000.00 available. However, one of the largest contributors has dropped their donation by $2000.00. The Auxiliary is planning to work even harder to raise more money for these deserving young women.

Our Medical Auxiliary has changed their annual business meeting to April in order to correlate with the volume of correspondence and reports from our National office. We hope that this will not be a detriment to the Medical Society, but an opportunity for dual service.

In June, as the new President of the Auxiliary, I had the opportunity to attend the meeting of the AMA in Chicago for their annual meeting and convention. It was with a great deal of pride that I was able to see Doctor H. Thomas McGuire elected Vice President of the AMA.

This spring and summer, the new officers and I have been busy making plans for another successful year. Already our Community Health chairman has started a program to inform us about the hazards of air pollution in our own area. This program will be presented in November with the attendance of Senator John Williams promised as well as that of other notables.

In realizing the importance of the New Castle County Vision Testing program, I am urging the Presidents of Kent and Sussex County to start the same programs downstate this fall. The Auxiliary has also been in touch with *Project Hope* for support of one of their deserving missions. Plans are already "afoot" to collect children's shoes—which meet certain specifications—that can be modified and used as corrective footwear for the many unfortunate children seen by this ship along its missions of mercy.

We are continuing our interest in the problems of Mental Health, also. Last year, the Auxiliary gave $2290.55 to A.M.A.E.R.F. through various charitable enterprises. We hope to do as well, if not better, this year.

Other programs include International Health, with a newly developed plan of distributing drug samples collected by our members, and legislative support of bills affecting the Medical Society.

Through an AMA Auxiliary distributed kit called Grassroots, the State Auxiliary hopes to present a truer picture this year of the doctor's life than has recently been publicized.

This report has consisted of both accomplishments and ideas which we hope to accomplish in this Auxiliary year of 1970-71. It is my earnest hope that when the President's report is given next year, we will have been able to complete these programs successfully.

Mrs. Joseph A. Elliott, ***President***

ADVISORY COMMITTEE TO THE WOMAN'S AUXILIARY

The Committee has had no formal meetings but has maintained a very close relationship with the members of the Woman's Auxiliary Executive Board. We have been available for advice, encouragement, and support when needed.

This Committee feels gratified to the Auxiliary for the many service functions the women have performed. Of special interest was the workshop for mental health volunteers which was well planned and well executed.

Future cooperative efforts between the Council of the Medical Society of Delaware and its Auxiliary will result in mutual benefit.

L. W. Whitney, M.D., *Chairman*
I. L. Chipman, Jr., M.D.
J. A. Elliott, M.D.
C. F. Richards, M.D.
I. J. Tikellis, M.D.

COMMITTEE ON AGING

The Committee on Aging held no meetings during the past year.

The Chairman of the Committee continued to function as a member of the Governor's Commission on Aging until it was disbanded, and subsequently he has served as a member of the Council on Aging, an advisory body to the Secretary of Health and Social Services.

Allston J. Morris, M.D., *Chairman*

R. H. Beckert, M.D.	**A. E. Maresch, M.D.**
A. A. Boytar, M.D.	**H. L. Reed, M.D.**
S. G. Elbert, Jr., M.D.	**H. Taylor, M.D.**
N. P. Jones, M.D.	**M. E. Traynor, M.D.**

COMMUNITY COUNCIL ON EMERGENCY SERVICES

The Community Council on Emergency Services, with the thirteen private and governmental agencies participating, has met at least monthly and determined solutions to many of the operating problems of the community in the adequate provision of emergency medical care. As the Medical Society of Delaware's representative on this Council, it has been very heartening to see the distinct interest of the community and its citizens in insuring that adequate medical care is available to all the citizens of our State, as well as to the transients who may be passing through on our highways.

William H. Duncan, M.D., *Coordinator*

COMMITTEE ON EDUCATION

As has been the major project of this committee in past years, the development of an ever-expanding Continuing Medical Education for Physicians program was further developed and expanded. The particular expansion occurred in the New Castle County area with the inclusion of the Riverside and St. Francis Hospitals, and an expansion of the participating agency of the Delaware Institute of Medical Education and Research. Therefore, this year's program, which was expanded in all the hospitals downstate, was sponsored jointly by the Delaware Institute of Medical Education and Research, the Jefferson Medical College of the Thomas Jefferson University, the University of Delaware, and the Medical Society of Delaware. The programs for 1969-70 were considered a particular success by all the participating physicians downstate. Brochures are available from the office of the Executive Director for those of you who may need additional copies, since all members of the Society received initial mailing of the brochures in August of 1970.

William H. Duncan, M.D., *Chairman*
G. K. Berger, M.D.
G. Botte, M.D.
J. A. J. Forest, Jr., M.D.
R. C. Hayden, M.D.
D. W. MacKelcan, M.D.
M. Oz, M.D.
J. Straughn, M.D.

ENVIRONMENTAL AND PUBLIC HEALTH COMMITTEE

The Environmental and Public Health Committee of the Medical Society of Delaware met on three occasions. It was their opinion that the criteria for sulphur dioxide and particulate matter, adopted by the State, were feasible at this time, but it was hoped they would be revised on a yearly basis. It was recommended that regulations be state-wide rather than applicable to New Castle County only.

The Committee met at the monitoring station of the Air Control Division on Ashley Place, Wilmington, where they were briefed by Mr. Norman Thomas, Acting Director of the Division of Air Safety Control. Some of the monitoring systems were not in working order at this time; however, the over-all picture was well covered and indeed showed that the State Department of Environmental Health is making strides in the proper direction.

At the third meeting, it was recommended that the State Society be informed as to the monitoring of particulate matter and sulphur dioxide and that Mr. Heller be asked for a summary of the advancements up to this time.

Doctor Henri Wendel is to attend the AMA seminar on Air Pollution to be held in New Orleans in October, 1970.

The open-hearing on criteria for carbon monoxide, photo-chemicals and hydrocarbons is to be carefully studied so as to help produce criteria for these contaminants that will be satisfactory for the health of the citizens of Delaware.

The Commitee hopes that the power companies will come up with better and more feasible technology for their nuclear wastes and other toxic emissions.

The Committee also recommends that the physicians of Delaware become involved in the problems of environment at both the state and federal levels.

	Frank T. O'Brien, M.D., *Chairman*
J. DeLaurentis, M.D.	**E. G. Orton, M.D.**
E. F. Gliwa, M.D.	**D. J. Reinhardt, III, M.D.**
J. M. Hofford, M.D.	**W. J. Vandervort, M.D.**
L. P. Lang, M.D.	**H. F. Wendel, M.D.**

FORMULARY ADVISORY BOARD

The Formulary Advisory Board consisting of representatives of the Medical Society of Delaware, the Delaware State Dental Society, the Delaware Pharmaceutical Society and the Delaware Osteopathic Society have met on a number of occasions during 1969-1970 to implement the establishment of a Delaware Formulary with the objective of selecting a list of commonly used medications to be prescribed generically and purchased in large quantities by the pharmacists of the State of Delaware.

The primary activity of this Board has been that of the education of the membership of each of the interested societies to recognize the goal of the Formulary Advisory Board, that is to obtain quality medication for patients in the State of Delaware at the lowest possible cost.

Seven drugs have been approved by the Formulary Advisory Board for an initial pilot trial of generic prescribing to ascertain if this system can be made to work in this particular state. Because of some technical difficulties, the final educational material has not been disseminated to members of the other interested disciplines, but this will be accomplished in the very near future and our initial trial of generic prescribing can then begin.

William J. Holloway, M.D., *Chairman*
W. H. Comer, M.D.
K. K. Kimura, M.D.
W. O. LaMotte, Jr., M.D.

GRIEVANCE COMMITTEE

The Grievance Committee of the Medical Society of Delaware meets on notification from Mrs. Anne E. Shane, the Executive Director, that a problem with a grievance towards any member of the Society is present or pending. During the past year, 1969-70, I am happy to report that there were no official grievances rendered to the committee for consideration.

Albert Gelb, M.D., *Chairman*
T. R. Brooks, M.D.
J. L. Campbell, M.D.
J. M. Levinson, M.D.
R. W. Powell, M.D.
H. J. Repman, M.D.

HEALTH CARE DELIVERY COMMITTEE

This Committee, newly formed, in recognition of the need of involvement of physicians in Health Care Delivery, was established by action of the Council July 31, 1969. This Committee is broadly based and liberally uses individuals outside of the Medical Society of Delaware to improve communications and correlate activities in the hope of avoiding duplication of effort. This is a mechanism for exchange of ideas and activities relative to the physicians' recognized responsibilities. This Committee has operated without parliamentary structure or function and is to be a reference point and a source of information as well as a catalyst for physician involvement and leadership. It is hoped to be a mechanism of implementing new and innovative programs of health care delivery. It is recognized there is a need for change from traditional methods of health care delivery in Delaware, and an attempt is being made to bring all facets of health care planning together, explore areas where voids exist, and seek ways to overcome these deficiencies. The practicing physician needs to show leadership with his expertise and be involved in these responsibilities. We have attempted to demonstrate our concerns by working through our own corporation, the Medical Society of Delaware. Physicians who are going to deliver the health care need a major role in planning how it is to be delivered. Administrative personnel, through our direction, must find ways to effectively implement these plans. In the analysis of systems of health care delivery alternatives need to be developed for efficiency, economy, and comprehensiveness, especially for ambulatory versus hospital in-patient orientation. New methods of prepayment financing are to be encouraged for ambulatory care, and physicians need to have more knowledge and involvement in fiscal matters as part of their responsibility. It is not felt there is a crisis in health care delivery in Delaware, but evolution needs to be encouraged and not revolution. The traditional methods have accomplished great strides in the past years for improved health and quality of patient care and have merit, but this progress needs to be continued.

There are many areas in which physicians can be involved in this form of activity under the "umbrella" of this committee, and it is important that further fragmentation does not continue with the activities of many agencies, which currently include the comprehensive health planning agencies Type A of the State and Type B of New Castle County; the Department of Health and Social Services; the Association of Delaware Hospitals; the Greater Delaware Valley Regional Medical Program, Delaware Areawide Committee, under the chairmanship of Doctor John Alden; and the Governor's Office.

On March 16, 1970, Doctor Albert L. Ingram, Jr., was appointed as the second of a number of department heads under the new cabinet form of government for the State of Delaware, and it is a compliment to physicians and the Medical Society that the Governor made this appointment of a physician. This new department will facilitate constructive changes, encourage communication and cooperation, provide liaison, and encourage innovative services among the divisions. This department operates under the express principle of cooperation between various segments of private and public sectors in a further effort to avoid duplication and dilution of effort. Governor Peterson has expressed interest in the highest quality of patient care in the most economical way possible. He has recognized that Government and public funds need to be increased and both must play a role in the provision of medical services, the Government thereby becoming more concerned and involved in the operation, especially with patient care, medical manpower, and costs.

Many meetings concerning Health Care Delivery with the attendance and involvement of physicians of the Medical Society of Delaware have been held during this year. The initial meeting of this Committee was held February 18, 1970, entitled "Physicians and Health Care Delivery," health planning coordination through the Medical Society of Delaware with introductory remarks by the Chairman and our President, Henry H. Stroud, M.D.; local activity programs were reported by Albert L. Ingram, M.D.; Harry F. Dowling, M.D., Special Assistant to the President for Medical Affairs, University of Delaware; Mr. Clifford T. Foster, Executive Director, Health Planning Council, Inc.; and Mr. Harry F. Camper, Director, Bureau of Comprehensive Health Planning, Delaware State Board of Health. A guest speaker, Mr. Cornelius M. Bowen, Assistant Regional Health Director, Health Service and Mental Health Services, United States Department of Health, Education, and Welfare, spoke expertly on "The Needs and Deficiencies of Systems of Delivery." This has been subsequently published in our Journal, Volume 42: 5, p. 113, (May) 1970.

There were many meetings of a Health Group attended by Doctors Stroud and Baganz under the auspices of the University of Delaware Technical Services chaired by Professor L. E. Stiffler and including Doctor W. Robert A. Bailey, Dean Mary Carl, Doctor A. L. Ingram, Doctor H. F. Dowling, Mr. C. T. Foster, Mr. R. R. Griffith, Mr. T. S. Spiker and Doctor John A. Perkins.

Health Forums under the New Castle County Medical Society sponsorship, arranged by Doctor Walter Comer in cooperation with Mrs. Arva Jackson, Administrative Assistant for Urban Affairs of the Governor's Office, were held with the objectives of the Society to demonstrate physicians do care and are interested in community health. These forums, which were three in number, were "Health and the Community," "Health and the Government," and "Health and the Individual." Attendance of these forums was by physicians, hospital administrators, health agencies, public health officials, and a limited number of consumers.

Leonard Fenninger, M.D., Associate Director for Health Manpower, National Institute of Health, was a featured speaker at a meeting May 20 to examine the concept of physician assistants and allied health manpower. In addition, B. Z. Paulshock, M.D., and Marjorie J. McKusick, M.D., reported on a conference attended in Chicago sponsored by the A.M.A. on "Physician Support Personnel in the 70's — New Concepts."

There were nine Task Force groups established during this year which had diverse activities. The Task Force for Comprehensive Health Care Centers, Family Oriented or Group Practice, and Health Care, including the disadvantaged groups and areas, had activities as individuals concerning the Southbridge Medical Advisory Council, Inc. for planning a neighborhood health center in South Wilmington. The Northeast Action Committee planning for a state service center at 26th and Governor Printz Boulevard in Wilmington was an activity of Jack Gelb, M.D. A Sussex County health clinic facility in Baltimore Hundred with the money of a trust of Doctor Pyle is being developed with the cooperation of local physicians and planning agencies along with Andrew Gehret, M.D. The Delaware Medical Group was formed as a group of private practicing physicians attempting to develop a comprehensive ambulatory health care service with the efficiency and economy of a group practice concept, hoping that by increasing the efficiency, medical resources can be more effectively used. The debate exists, not of the advisability of group association, but of the nature of group association, and offers some solutions, but not a panacea. Robert L. Dewees, M.D., chaired the Task Force.

The Task Force for the Extension of Hospital Facilities and Services into the neighborhoods chaired by Doctor William Duncan held two meetings on January 20, 1970, in conjunction with the New Castle County Medical Society along with Mrs. Lillian Jones, the Wilmington Medical Center Community Health Coordinator. Doctor Duncan has also been active in the Model City Programs and has been spearheading a statewide coordinated Home Care program.

Doctor Hearne has been chairman of the Task Force Maternal Child Health Care Facilities and Preventive Health Care Centers and Program.

Doctor Gliwa has been chairman of the Task Force for Ambulatory Health Care Facilities Development.

Doctor William LaMotte has been chairman of the Task Force for Liaison with Executive Legislative Government Health Programs and Financing.

Doctor Barrett Heckler has been chairman of the

Task Force for Education, Supply, and Distribution of Physicians in Delaware and has been active individually with the Medical Institute.

Marjorie McKusick, M.D., has been chairman of a Task Force and an Ad Hoc Committee of the Medical Society for Careers Development and Training of Allied Health Personnel and has developed and implemented a program, as well as defining the function of the Committee, to study the health manpower needs as to what type of physician assistants are needed, where and how needed; to study how other areas of the country are meeting this problem; to determine the specific training programs, needs of legislation, community acceptance, and the economic factors involved. This Task Force has held two meetings in conjunction with the Physicians' Assistants Ad Hoc Committee of the Medical Society of Delaware. These meetings were attended by physicians, nurses, educators, and community representatives, and attempts were made to define the different kinds of paramedical personnel, their training requirements, and their roles in the health team. We have reviewed the training programs presently functioning at the University of Delaware. The Committee felt that the need for other types of training programs in the State depended on acceptance by physicians, nurses, and the consumers of the new type of Physician Assistants. It was agreed that the best approach would be to hire a person trained elsewhere to assist in the DAPI program and other health clinics in the City, and, if successful and proved to be accepted, to serve as the nidus for consultation and inception of training similar type persons in the community. The Council of the Medical Society has approved this recommendation. The problem of licensing through legislation is still being studied.

Doctor Paulshock conducted a study of physician attitudes towards the Physician Assistant, and her findings will appear in the JAMA in the near future.

Doctor Frelick is acting chairman of a subcommittee, exploring ways in which private physicians can help in the training of graduate nurses at the University of Delaware.

Doctor William Johnson has been chairman of the Task Force for Population Growth and Control, Family Planning, and recognized the value of the DAPI program and has been active with the starting of a gynecological-endocrine clinic for fetal salvage and a fetal monitoring unit for high risk pregnancy. The traditional maternal mortality review by physicians has continued.

David Platt, M.D., has been chairman of the most recent Task Force for Prepaid Group Practice to explore the setting up of a comprehensive prepaid medical coverage program open to all members of the Medical Society of Delaware.

Herbert M. Baganz, M.D., *Chairman*

J. W. Alden, Jr., M.D.
C. Allen, M.D.
M. V. Andersen, Jr., M.D.
K. Anstreicher, M.D.
J. E. Belgrade, M.D.
R. J. Bishoff, M.D.
W. W. Briggs, M.D.
J. L. Campbell, M.D.
Mr. H. F. Camper
N. L. Cannon, M.D.
W. H. Comer, M.D.
R. C. Corbalis, M.D.
Mr. L. Davis
L. O. DeBernard, M.D.
H. Dowling, M.D.
W. H. Duncan, M.D.
J. J. Egan, M.D.
K. L. Esterly, M.D.
L. B. Flinn, M.D.
R. B. Flinn, M.D.
Mr. C. T. Foster
R. W. Frelick, M.D.
A. Gelb, M.D.
J. Gelb, M.D.
C. I. Glassman, M.D.
E. F. Gliwa, M.D.
Mr. R. R. Griffith
Mr. E. Hare
C. B. Hearne, M.D.
B. Heckler, M.D.
F. I. Hudson, M.D.
J. F. Hughes, M.D.
M. S. Hurm, M.D.
A. L. Ingram, Jr., M.D.
W. D. Johnson, M.D.
W. O. LaMotte, Jr., M.D.
L. P. Lang, M.D.
D. A. Levitsky, M.D.
J. W. Maroney, M.D.
L. C. McGee, M.D.
M. J. McKusick, M.D.
E. R. McNinch, M.D.
C. B. Middleton, M.D.
M. H. Mires, M.D.
A. J. Morris, M.D.
E. G. Orton, M.D.
B. Z. Paulshock, M.D.
H. S. Rafal, M.D.
C. L. Reese, III, M.D.
D. J. Reinhardt, III, M.D.
C. S. Riegel, M.D.
B. B. Rose, M.D.
L. Rosenbaum, M.D.
H. Rosenblum, M.D.
D. E. Saunders, M.D.
A. R. Shands, Jr., M.D.
Mr. T. S. Spiker
H. H. Stroud, M.D.
C. Vileisis, M.D.

MATERNAL AND CHILD CARE COMMITTEE

The Maternal and Child Care Committee at its last meeting proposed a better reporting system. This was suggested by Doctor Devenis, and will be worked out with Doctor Middleton in Dover. We suspect that some maternal deaths are being missed in the present system of scanning death certificates, which do not always indicate whether the patient was pregnant.

We know this method is unsatisfactory because we retrospectively correspond with the medical record rooms of each hospital and invariably pick up maternal mortalities missed by the other method. We feel that even this is an imperfect system and would like to introduce a prospective, rather than retrospective method.

The essence of Doctor Devenis' proposal is to provide a form through Doctor Middleton which would be initiated with each maternal mortality associated with any hospital in the state. Although there would be a duplication of effort, we should like the Chairman of each Department of Obstetrics and Gynecology to share this responsibility with the Senior Medical Record Librarian in the institution. We feel that this method, coupled with a continuation of the retrospective analysis at intervals, would provide more meaningful statistics.

We have been singularly unsuccessful in obtaining data from Dover Air Force Base. We know of at least two maternal mortalities there within the past five years. Otherwise, cooperation from the hospitals has been quite good. I am certain that the Air Force files its own maternal mortality statistics, and these may even be made available from that central records file at Boulder, Colorado.

I should not presume to consider our statistics completely accurate, although I feel they are almost complete. If we indeed had eleven deaths (extrapolating in the Dover figure, which is un-confirmed), our maternal mortality rate is less than 1 per 4,000 deliveries and would be about the national average. This is a marked improvement over any preceding five-year period.

I hope that we will be able to further refine our data-collecting methods and proceed with the educational aspects of the Maternal and Child Care Program that were outlined in last year's report and worked out with Doctor Lennard Weber before his untimely death.

William D. Johnson, M.D., *Chairman*
J. B. McClements, M.D., *Vice-Chairman*

M. V. Andersen, M.D.
J. E. Benzel, M.D.
T. E. Chronister, M.D.
A. M. Devenis, M.D.
T. E. Dyer, M.D.
R. E. Erb, M.D.
K. L. Esterly, M.D.
P. Francisco, M.D.
J. B. Geissinger, M.D.
R. C. Hayden, M.D.
G. R. Hilty, III, M.D.
N. Kuseybi, M.D.
W. A. E. Leitzinger, M.D.
D. A. Levitsky, M.D.
C. L. Minor, M.D.
J. C. Rawlins, M.D.
C. P. Turner, M.D.
R. Waterhouse, M.D.
O. S. Weaver, M.D.

MATERNAL MORTALITY STATISTICS

1965 - 1969

1965		Case Number
St. Francis Hospital	May, 1965	1204-1965
Delaware Division	June, 1965	378289
Delaware Division	July, 1965	361544
Wilmington General Division	None	
Memorial Division	"	
Milford Memorial Hospital	"	
Beebe Hospital	"	
Nanticoke Memorial Hospital	"	
Kent General Hospital	"	
Riverside Hospital	"	
1966		
St. Francis Hospital	None	
Delaware Division	"	
Wilmington General Division	Feb., 1966	124568
Memorial Division	None	
Milford Memorial Hospital	"	
Beebe Hospital	"	
Nanticoke Memorial Hospital	"	
Kent General Hospital	"	
Riverside Hospital	"	
1967		
St. Francis Hospital	None	
Delaware Division	June, 1967	361544
Wilmington General Division	Feb., 1967	138801
Memorial Division	Jan., 1967	20-76-69
Milford Memorial Hospital	None	
Beebe Hospital	"	
Nanticoke Memorial Hospital	"	
Kent General Hospital	"	
Riverside Hospital	"	
1968		
St. Francis Hospital	None	
Delaware Division	"	
Wilmington General Division	"	
Memorial Division	"	
Milford Memorial Hospital	May, 1968	123798
Beebe Hospital	None	
Nanticoke Memorial Hospital	"	
Kent General Hospital	"	
Riverside Hospital	"	
1969		
St. Francis Hospital	None	
Delaware Division	Feb., 1969	428687
Wilmington General Division	None	
Memorial Division	"	
Milford Memorial Hospital	"	
Beebe Hospital	"	
Nanticoke Memorial Hospital	"	
Kent General Hospital	"	
Riverside Hospital	"	
	Total	9

MEDICAL ECONOMICS COMMITTEE

The Medical Economics Committee arranged a breakfast meeting with the PRO group prior to the Annual Meeting in October of 1969. A repeat of this function is planned for this year. The PRO executives as well as their lawyers and local participants will be present to answer questions regarding the Medical Society of Delaware's participation in PRO and also the services which this group offers for its incorporation.

The Chairman of the Committee has also met, as an invited member, with the New Castle County Medical Society Economics Committee on two occasions. These meetings were to discuss the malpractice insurance problem with insurance representatives both nationally (Aetna Insurance Company) and locally (J. A. Montgomery, Inc.). At one of these meetings Robert Short, Insurance Commissioner of Delaware, also was in attendance as well as interested participants from the legal profession. These meetings were mostly of an informative nature, and further discussions are planned in the future.

Lastly, a special report appeared under the Chairman's signature in the August issue of the *Delaware Medical Journal* entitled "Keogh and Incorporation."

Davis G. Durham, M.D., *Chairman*

O. S. Allen, II, M.D.
C. L. Edwards, M.D.
J. R. Fox, M.D.
M. Gibbs, M.D.
C. E. Graybeal, M.D.
J. M. Levinson, M.D.
R. L. Meckelnburg, M.D.
D. Schetman, M.D.
I. J. Tikellis, M.D.

MEDICAL LOANS COMMITTEE

The Medical Loans Committee did not meet this year. The $1,000 available for distribution was transferred to the similar program administered by the Academy of Medicine with appropriate credit being given to the Medical Society of Delaware as the source of funds when the successful applicant is notified.

The Society continued the three scholarships awarded in previous years.

Gordon Keppel, M.D., ***Chairman***

C. Allen, M.D.
J. E. Benzel, M.D.
E. S. Dennis, M.D.
S. G. Elbert, Jr., M.D.
J. A. Elliott, M.D.
W. R. Johnson, M.D.
C. Papastavros, M.D.
I. J. Tikellis, M.D.
H. Wilk, M.D.

MEDICAL SCHOOL FOR DELAWARE LIAISON COMMITTEE

The Medical School for Delaware Liaison Committee held one meeting during the year, at Goodstay Center, on April 2, 1970, but exchanged more correspondence.

It was previously agreed that the Delaware Institute for Medical Education and Research was then a fait accompli; hence there was no need for more frequent meetings. All members of the Medical School Liaison Committee received a June 12 release from the Medical Center stating: "The Affiliation Agreement with Jefferson Medical College that has been approved by Staff Council is available on request from the Medical Staff Office." Copies were obtained and sent to each member, July 22, 1970.

This was followed by a July 1, 1970 news release in the Morning News, entitled "Medical School Pact Signed." It was further stated that "This year, the General Assembly has authorized more than $750,000 for the cooperative medical education program. The Center will get $491,000 to prepare itself to become a teaching institution. The University will get $114,000 for additional staff, a program of continuing education for practicing physicians, research and supplies. The University's premedical graduates make up half of the 16 entering students this year. It sends 20 to other medical schools each year. Jefferson will get a subsidy of $8,000 per student per year ($128,000 this year), to permit it to charge the same low tuition paid by the undergraduates at the University of Delaware. The Delaware Academy of Medicine will act as fiscal agent for the $35,000 awarded for the Institute's scholarship and loan programs."

In view of these facts, those present for the Liaison Committee asked that our report be summarized as follows:

(1) It was the unanimous opinion that the Committee should continue to function.
(2) Whenever feasible, the President or the Council should clearly define the purpose and functions of this Committee.
(3) If it is to be truly a Liaison Committee, then medical representatives should be on the Committee from the University of Delaware, the Wilmington Medical Center, such as Doctor Martz, and perhaps also from the Institute and the Foundation. Doctor LeRoy will continue to attend as a member of the Institute and the Foundation in the interim.
(4) It was felt that the Governor should in his selection of three appointees to the Institute, be requested to consider naming a practicing physician from each county, and from a list to be supplied him by the President of the Medical Society of Delaware.

C. Anthony D'Alonzo, M.D., ***Chairman***
J.E. Marvil, M.D., ***Co-Chairman***

R. T. Beattie, M.D.
J. J. Bredall, M.D.
S. W. Casscells, M.D.
I. F. Chavin, M.D.
H. R. Cowell, M.D.
D. G. Durham, M.D.
C. L. Edwards, M.D.
J. B. Geissinger, M.D.
K. K. Kimura, M.D.
L. P. Lang, M.D.
J. M. Levinson, M.D.
D. A. Nelson, M.D.
L. W. Whitney, M.D.

COMMITTEE ON MEDICAL SERVICE AND PUBLIC RELATIONS

The WDEL radio program "Ask the Doctor" continues to be well received by the public.

Radio and press releases and releases to the schools of our state were made at the time of the solar eclipse that occurred early this year. The releases warned of the hazard of eye damage that could result from persons watching the eclipse.

A press release concerning the "pill" was made early this year. This information represented a consensus of the obstetrical staff of the Wilmington Medical Center and was released to allay the great public apprehension that developed after the United States Senate hearings on this drug.

At the time of the adverse publicity surrounding the alleged Medicare and Medicaid abuse in certain localities, the Committee considered what response might be made locally. No instances of abuse in Delaware were publicized, to the knowledge of the Committee. The Committee felt that our image would be best preserved by the membership continuing to practice fair dealing and honesty with all third party payment plans — whether public or private.

In exploring means of better public exposure for the Society, the Committee considered that purely volunteer efforts by physicians were inadequate because of lack of physician man-hours. It was the consensus that this committee should be funded so that in the future it can secure the use of various advertising media to enhance the Society's image.

Calvin B. Hearne, M.D., *Chairman*

R. J. Bishoff, M.D.	**C. L. Reese, III, M.D.**
S. G. Elbert, Jr., M.D.	**S. G. Rogg, M.D.**
P. J. Mette, M.D.	**L. Rosenbaum, M.D.**
J. C. Rawlins, M.D.	**D. E. Saunders, M.D.**

W. H. Comer, M.D., *(Liaison with New Castle County Medical Society)*

MEDICINE AND RELIGION COMMITTEE

Beginning December 1, 1970, the Wilmington Medical Center will have a full-time chaplain.

The Rev. Lynn Swanson, who for the past 18 months has been giving the Center superior service on a part-time basis, will assume the duties. He is well qualified and sincerely dedicated.

In March 1970 at the AMA Regional Meeting of the Committees of Medicine and Religion, it was emphasized that the era of partitioning the patient is coming to a close, the era of assigning the soul to the clergyman and the body to the physician. The chaplain is the co-worker in total patient care.

Additional suggestions from the Regional Meeting of State Chairmen:

Include "clergy" sheets with the clinical chart (as at the Massachusetts General Hospital). The chaplain or visiting clergyman writes comments after his visit. He is not to look at the chart. His comments need not be a part of the permanent record.

Hospitals should have an annual "Clergy-Physicians Day." This would welcome clergymen to the hospital and acquaint them with the facilities. Staff physicians would serve as guides.

The hospital chaplaincy is not a sectarian ministry. The hospital chaplain works with the patient and the physician and can also serve as a buffer between the hospital and the community. The chaplaincy is approved by Jewish, Roman Catholic and Protestant bodies.

Charles M. Bancroft, M.D., *Chairman*

J. B. Baker, M.D.	**R. N. Taylor, M.D.**
S. Bishop, M.D.	**R. H. Weiss, M.D.**
T. H. Hogshead, M.D.	**The Reverend L. Casson**
W. J. Holloway, M.D.	**The Reverend C. Hart**

MEDICO-LEGAL COMMITTEE

As in the past, we have continued with very sympathetic co-operation by the Delaware Bar Association under the direction of Albert L. Simon, Esquire.

Our primary function has been the continuation of the Malpractice Screening Panel. This effort continues to expand and has had particular requests regarding its mechanics from the State of New Jersey.

On July 23, 1970, a meeting of the Committee on Medico-Legal Affairs was held.

As your Chairman, I would say that there is no challenge more enlightening than a collision of legitimate interests, if followed by cooperative and knowledgeable solutions.

I feel that this has been the increasing focus of interdisciplinary activity in law and medicine and I appreciate that, from the medical aspect, the specter of malpractice frightens us because of a feeling of unequal competition in a game in which both sides are not bound by the same rules.

Although this challenge is formidable, solutions do appear, and I would say that, in our State, progress has been particularly good.

James T. Metzger, M.D., *Chairman*

J. A. Arminio, M.D.	**E. R. McNinch, M.D.**
G. K. Berger, M.D.	**R. Meckelnburg, M.D.**
J. L. Campbell, M.D.	**D. A. Nelson, M.D.**
S. W. Casscells, M.D.	**C. Papastavros, M.D.**
I. F. Chavin, M.D.	**R. W. Powell, M.D.**
W. B. Cooper, M.D.	**R. Rosenblum, M.D.**
M. Gibbs, M.D.	**D. Schetman, M.D.**
C. E. Graybeal, M.D.	**I. J. Tikellis, M.D.**
A. Z. Hameli, M.D.	**R. H. Weiss, M.D.**

R. C. Hayden, M.D.

MEDICO-LEGAL COMMITTEE ADDENDUM

The following represents a resume of the activity of this Committee since September 1969.

Seven cases were brought before the Joint Committee, a drop of four from the previous year.

Of the seven, four have been heard and all four have been found in favor of the doctors involved. Three cases are pending.

Of the seven cases, three were brought for improper diagnosis or discharge without diagnosis; three for injuries allegedly received by careless or improper surgical procedure; one for both improper diagnosis and injury.

COMMITTEE ON MENTAL HEALTH, ALCOHOLISM AND DRUG DEPENDENCE

The individual physicians on this Committee have been extremely active this past year. Some of their accomplishments are as follows:

1. Member attended the 16th Annual Conference of State Mental Health Committees of the American Medical Association in Chicago.
2. Member on Governor Peterson's Drug Control Committee.
3. Member at the special meeting of the Academy of Medicine to honor the distinguished service of Walter S. Carpenter.
4. Members at the Annual Meeting of the American Psychiatric Association. Participation in group work on the objectives of this Committee.
5. Member conducted an educational program throughout the year on Mental Health, Alcoholism and Drug Abuse with volunteer seniors and juniors at one of our Wilmington preparatory schools.
6. Member participated in a Workshop held at Sanford School with W. Walter Menninger, M.D., of the Menninger Clinic, on the subject of Creative Psychology. This Workshop was conducted by one of our members and Doctor Menninger with emphasis on Mental Health, Alcoholism and Drug Abuse, as well as violence. In attendance were most of the heads of the independent schools as well as administrative heads and counselors from a number of the public schools — and local philanthropists.
7. Assistance in developing an educational and treatment program at Ferris School for juvenile offenders.
8. Assistance to Organization Interest — a group of adult ex-offenders who work mainly with individuals from our Black Community on a self-help basis. This has included an effort to initiate a program with juvenile as well as adult offenders.
9. Assistance in establishing a successful local black commercial enterprise which indirectly included work involving the objectives of this Committee.
10. Assistance to the newly-established Detoxification Center for alcoholism.
11. Assistance in developing A Program to Curb Liquor-Related Accidents and Deaths on Delaware Highways working through a variety of agencies and groups.
12. Member conducted an educational program dealing with psychotherapy, self-relaxation and hypnosis at one of the Mental Health Clinics, the Alcohol Ward at the State Hospital, various AA meetings, University of Delaware, Brandywine College, various high schools, churches, PTA meetings, Homemakers, Parents Without Partners, Service Clubs, etc. Alcoholism and drug abuse were emphasized.
13. The establishment of a close working relationship with a number of psychiatrists. This has been most helpful in rendering service in a number of areas not included in items mentioned above and should provide a solid foundation upon which to establish effective communications and further contributions to the work of this Committee.

Thomas H. Hogshead, M.D., *Chairman*
T. M. Alatur, M.D.
F. W. Baker, Jr., M.D.
R. Bishoff, M.D.
S. Bishop, M.D.
L. O. DeBernard, M.D.
R. P. Delaplaine, M.D.
E. S. Dennis, M.D.
R. J. Kester, M.D.
D. W. MacKelcan, M.D.
J. C. Pearson, M.D.
W. T. Reardon, M.D.
H. L. Reed, M.D.
M. E. Traynor, M.D.
L. Bales, M.D.
K. Gurdikian, M.D.

PEER REVIEW AND PROFESSIONAL EVALUATION COMMITTEE

In the February 1970 issue of the Delaware Medical Journal, President Henry Stroud discussed the necessity for the development of a strong peer review mechanism in the State of Delaware. A copy of this article and a copy of the additional background material for the first organizational meeting of this Committee are attached as a part of this report. (On file in Society office).

In order to provide coordination on a statewide basis and to eliminate unnecessary duplication of effort, the Committee was structured as three County Committees coming together to form a State Commitee with a State Chairman in addition to the three County Committees. At the present time this is structured as six members of the New Castle County Committee and three each on the Kent and Sussex Committees. These men were all appointed by the President of the State and County Societies respectively.

The statewide Committee had its organizational meeting in April and a follow up meeting in August. Meanwhile, the County Committees had been meeting as frequently as necessary to address themselves to the problems at hand. It has been emphasized that this is not a disciplinary committee, but an educational committee to attempt by peer effort to assure the highest quality health care delivery at reasonable cost.

To date the Committees have confined themselves largely to consideration of apparent deviations from usual practice patterns. For the most part, the Committee has found that abnormal practice patterns signaled by the computer are indeed not that at all, but usually good medical care for a particular physician in the particular environment of his practice. Of the twenty or so practice patterns reviewed to date, only two or three suggest that there is any abuse or any deviation from medical necessity indications. For the most part, these first few months of activity have revealed far more to support amongst our physicians than to criticize. Nevertheless, there have been some experiences which suggested the necessity for the development of guidelines for the future, and the four guidelines developed to date are as follows:

Guideline No. 1 — In the case of a physician who is on an administrative salary in an institution and who in addition has some medical responsibilities to some of the patients who come under his administrative jurisdiction, he may bill for this medical care at the rate of two such visits per week. Beyond this, documentation for medical necessity would be required.

Guideline No. 2 — When a patient insists upon more frequent treatment than is felt necessary by that patient's physician, the situation develops where the patient and not the physician is directing the care for this patient. The physician should then inform this patient that the third party involved will be billed for services to the extent that the physician feels are medically necessary and that services beyond this he may provide if the patient insists, but that such services will be the financial responsibility of the patient. The physician shall at the same time inform the third party which will then directly contact the patient involved, indicating that in the opinion of the attending physician the services in question are not medically indicated and hence are not covered.

Guideline No. 3 — When a physician examines or treats more than one patient in the same house during a house call, the physician should bill for his usual house call fee for the first patient, but for one or more additional patients under those circumstances, he should bill at a level not to exceed the normal fee for an office visit.

Guideline No. 4 — If a patient in a hospital has been operated upon by an out-of-town surgeon and continuing medical care while in the hospital is indicated, it is proper for the family physician to be reimbursed for daily visits to this patient if he feels these are medically necessary. These daily visits, however, are not to exceed the normal length of hospital stay for the particular diagnosis in question, and visits beyond this would require documentation of medical necessity for further reimbursement.

Activities of the County Committees will in the future no doubt develop other guidelines which will be studied by the total state membership and submitted for guidance for physicians and third parties. The broader approaches of peer review as outlined in the President's Page will also be pursued in the future. Meanwhile, it is urged that every physician cooperate with the Peer Review and Professional Evaluation Committee, serve as consultant when requested, and welcome inquiries if and when they come about their own medical practice.

William O. LaMotte, Jr., M.D., *Chairman*

D. Levitsky, M.D.
A. Bacon, M.D.
J. Lazzeri, M.D.
W. Omans, M.D.
W. Briggs, M.D.
H. Taylor, M.D.
I. Tikellis, M.D.
D. Walters, M.D.
G. Spong, M.D.
W. P. Portz, M.D.
C. Moyer, M.D.
D. Reinhardt, M.D.

COMMITTEE ON PREPAYMENT

Peer review, a critical and important activity of the Medical Society of Delaware and its physicians, has been given broader scope this year and is no longer under the "umbrella" of the Prepayment Committee. This peer review activity during the initial portion of this year came under William O. LaMotte, Jr., M.D., in his capacity as Vice Chairman of this Committee. The Peer Review and Professional Evaluation Committee is now a separate and distinct entity from the Prepayment Committee, which is now more closely involved wih fiscal affairs and contracts concerning "third party" involvement in the practice of medicine.

The Prevailing Fee Program during this past year has enlarged its scope of benefits as well as the proportionate number of Blue Shield subscribers involved through the development of "Standard 80" and "Comprehensive 80" Plans, which, in many ways, are similar to the previous Prevailing Fee concept at 100% level of prepayment involvement, but with the patient or subscriber obligated for a fixed, predetermined amount of 20%. The usual, customary and reasonable program as a free-standing insurance concept with effective peer review was altered to use usual and customary as it relates to the Delaware Prevailing Fee Program. The largest growth of the "Standard 80" and "Comprehensive 80" Programs offered by Blue Cross and Blue Shield of Delaware, Inc., was approved by the Prepayment Committee and the Council of the Medical Society of Delaware, October 14, 1969, with an effective date of November 1, 1969. The contract letter of the participating physician extending his prior Blue Shield contract to Prevailing Fee of November 1966 was temporarily extended. Considerable time and effort by the Prepayment Committe have ensued during the year in the development of a satisfactory contract to recommend for the physicians' participating agreement with Blue Cross and Blue Shield of Delaware, Inc. This new contract extends the time limit to submit claims, alters the cancellation clause to be consistent with the prior prevailing fee concept, defines clearly the duties and responsibilities of the Plan and participating physicians for Medical Review Committee activity, expands the definition of physicians, and combines two former documents in an updated fashion, but allowing physicians to express options. The prevailing fee concept was reaffirmed without provision for automatic escalation, but it is recognized that further physician education is needed to have a full understanding of how to make the concept work for individual and mutual physician benefit. It offers a maximum and reasonable amount of individual physician responsibility and independence with the assistance and balance of control through the involvement of the Medical Society of Delaware. Some compromise of full free range of control of fees is involved; however, this, realistically in the present time, fiscal responsibility must be demonstrated by the physician. In a positive fashion he must show his interest in controlling cost and also be realistic that he is keeping pace with his costs. It has not been decided whether weighted fees shall be used in calculating the 90th percentile. The new Blue Shield payment voucher shows the 20% co-payment portion obligation that is the maximum responsibility under this contract for the patient to the physician involved in the service rendered.

A recomputation of the 90th percentile, with an effective date of December 1, 1969, was accomplished and reviewed by the Committee. There is noted a leveling-off of the number of procedures with fee changes compared to the prior years, and of the 377 increases in the 90th percentile, these were all effectively resolved. It is noted that there were 20 decreases in the 90th percentile. It is important that the physician realize the importance of keeping his fee schedule current for personal and mutual benefit of others. There appears to be no advantage in making public the data, which has been confidential as to the specific fee schedule. Published customary fee schedules are available for the area, and relative value schedules are readily available to assist the physician in setting his fees. The prevailing fee works when individual physicians take their responsibility over the alternatve of a fixed fee schedule. The physician should bill the third party the same amount he would bill his patient irrespective of prepayment insurance. A recomputation of the 90th percentile at least once annually was acknowledged as necessary by the Committee.

The Prevailing Fee Program for the 100% prepayment contracts was extended to many groups during this past year with the decision of Council to continue to review and authorize the 100% Prevailing Fee Program contract to new groups.

The Prepayment Commitee recognizes an increasing obligation in physician education concerning the Prevailing Fee Program independently and in conjunction with the Blue Shield Plan.

The Medicare-Medicaid Social Security requirement for the determination of usual and customary from the derivation of a mathematical mean derived from actual charges rather than filed fees is in process of evaluation, and no separation of this group of individuals artificially, by prepayment, from the main stream of medical care and practice can be accepted.

The retirement of Mr. Harold V. Maybee, who came to Wilmington in 1935 to operate Group Hospital Service, Inc., the early hospitalization plan, followed by the Blue Shield in 1943, was recognized and honored during the year for his contribution in the area of prepayment. His time of activity saw the assets of Blue Cross-Blue Shield of Delaware, Inc., reaching over nineteen million dollars and the Blue Shield Medical-Surgical Plan covering over 350,000 subscribers.

The proposal of Doctor Platt that the Medical Society of Delaware take the initiative in setting up a state-wide Society-sponsored Comprehensive Prepaid Medical Care Program was recognized and approved in principle by the Council; and a special committee and task force has been appointed by the President headed by Doctor Platt under the Health Care Delivery Committee to explore and develop this proposal.

The satisfactory coding of services and an improved simplified billing claim form and procedure with the Blue Shield Plan are still unfinished items of activity of the Prepayment Committee, and there is hope that this area, which only leads to escalation of costs of medical care, can be resolved during the coming year with further activity by the Committee.

Herbert M. Baganz, M.D., *Chairman*
John J. Egan, M.D., *Vice-Chairman*

J. W. Abbiss, M.D.
O. S. Allen, II, M.D.
J. A. Arminio, M.D.
J. E. Belgrade, M.D.
D. C. Cameron, M.D.
J. M. Chase, Jr., M.D.
I. F. Chavin, M.D.
C. L. Edwards, M.D.
J. A. J. Forest, M.D
J. Gelb, M.D.
M. Gibbs, M.D.
J. M. Levinson, M.D.
D. A. Levitsky, M.D.
H. T. McGuire, M.D.
W. W. Moore, M.D.
R. W. Powell, M.D.
H. S. Rafal, M.D.
K. S. Russell, M.D.
A. H. Seeger, M.D.
O. Sluzar, M.D.
H. Taylor, M.D.
I. J. Tikellis, M.D.
L. W. Whitney, M.D.
H. Wilk, M.D.
C. E. Graybeal, M.D.
A. Lazarus, M.D.
R. F. Lewis, M.D.

MEDICAL REVIEW COMMITTEE

(Subcommittee of the Prepayment Committee)

This year there were three meetings of the Committee, which represents a recognition of the efforts of prior meetings and committees to establish guidelines and protocol for claims' processing and to avoid, insofar as possible, individual claim consideration. There has been further understanding on the part of the physicians of the Medical Society of Delaware of the operation of the prevailing fee, Medicare and Medicaid programs.

The procedure for evaluation of claims prior to payment or submission to this Committee includes a comparison of the procedure to the physician's filed fee and the 90th percentile for that particular physician's specialty. If the requested fee is in excess of the physician's filed fee, the physician is contacted to determine if there were any extenuating circumstances which would warrant an additional allowance. In addition, the appropriate medical records are requested for further substantiation of the requested fee. If the physician has no filed fee for the procedure and there is no 90th percentile in his specialty for that procedure, the procedure is compared to other specialties to determine if there are any filed fees or 90th percentiles for that particular procedure. The physician's conversion factor and, for reference, a P.S.I. relative value unit are calculated to determine if the claim could be paid. The comparable circumstances which give a listing of claims paid during the most recent year are evaluated to determine if the procedure has been performed during this past year and at what frequency and charge. The case is reviewed by the Plan consultant, and, based on information available and on his medical judgment, a preliminary judgment of this fee is made. This fee is then offered to the physician, and if he does not choose to accept the suggested allowance, the case is presented to the Medical Review Committee. In some cases the California Relative Value studies are utilized to determine the relationship of the particular procedure in question to other procedures that the physician performs; however, this is not fully accepted as a conversion factor and is used only as an aid in the determination of payment. Physicians who do not concur with the Committee decision have the right to appear before the Committee for direct presentation of their facts and also subsequently to appeal to the Council of the Medical Society of Delaware; claim material from third party sources as well as from a subscriber or consumer is accepted by this Committee also.

This year the Medical Review Commitee and the Prepayment Committee were active in establishing, under the "umbrella" of these committees, a "free-standing" committee for Peer Review and Professional Evaluation to secure universal acceptance and application of the review concept as the most meaningful method for creating a public awareness of medicine's effort to assure high quality of health services at a reasonable cost, slowing the rate of escalation of health care charges, stimulating health insurance organizations to make broader protection available to more people, and retaining professional control in the patient-physician fiscal and economic relationship. It is recognized that there is a need for a more comprehensive and accurate source of information than exists in our present system in which information is predominately generated by third party carriers. However, the initial function of the Peer Review and Professional Evaluation Committee concerns itself with areas somewhat distinct from fees reviewed by the Medical Review Committee, initially functioning to handle the backlog of questionable practices, charges, medical necessity and utilization.

The members of the Medical Review Committtee accepted the concept, that in order to broaden the base of participation and information, alternate members can be invited to take their place at committee meetings in their absence. There were twelve prevailing fee claims reviewed, of which five were recommended to be paid at the physician's requested fee and seven to be paid at a reduced amount. There were five Medicare-Medicaid claims reviewed, of which one was approved to be paid at the requested fee and four recommended to be paid at a reduced figure. One special consideration concept of combined procedures was reviewed and approved. A fee for use of equipment for testing as part of a physical examination diagnostic work-up was not approved for payment. Preoperative visits and guidelines were reviewed, and it was felt that continued individual consideration was necessary under certain circumstances, as well as for exceptions in areas of major surgery as a separate acceptable fee beyond the surgical procedure. It was approved to discontinue "rounding" claim payments to the nearest dollar amount to assist in increased efficiency by machine-computer processing used to replace personnel. The cycle time for processing 75% of the claims under the prevailing fee has been reviewed, and it is recognized that efforts are being made to improve the claims' processing; however, there is much that needs to be done in spite of new employees, overtime, additional training and machine assistance.

Herbert M. Baganz, M.D., ***Chairman***
I. F. Chavin, M.D. **A. Lazarus, M.D.**
J. M. Chase, Jr., M.D. **J. E. Belgrade, M.D.**
J. M. Levinson, M.D. **J. Gelb, M.D.**
C. L. Edwards, M.D. **H. Wilk, M.D.**
H. T. McGuire, M.D. **L. Whitney, M.D.**
R. F. Lewis, M.D.

COMMITTEE ON REHABILITATION

The Committee on Rehabilitation has continued to focus its attention on the Vocational Rehabilitation Division. Many changes have taken place during the year, the major one being the transfer of the Division of Vocational Rehabilitation from the State Department of Public Instruction to the newly created Department of Labor. The Division has undergone a slight revision in name and now is identified to the public as Vocational Rehabilitation Service.

In a continuing effort to bring Rehabilitation Services closer to the public, several new offices have been established. The Kent-Sussex District office, located in the new Townsend Building in Dover, is staffed with a supervisor, five rehabilitation counselors and a medical consultant, J. Stites McDaniel, M.D. Four outreach offices have been established in the Wilmington area.

During the year, 684 clients of Vocational Rehabilitation Service achieved gainful employment, bringing to 13,407 the number rehabilitated since the inception of the program in 1939. Another 2,832 persons received some rehabilitation service as compared to 2,287 in the previous year.

Vocational Rehabilitation Services' program employed physicians for examination, surgery and treatment of 3,154 rehabilitation clients at a cost of $149,746. An additional $67,738 was spent for hospital fees for clients under the program.

The Committee wishes to thank physicians, sanitoriums, and hospitals for their active role in making referrals, approximately 64.4%.

Martin B. Pennington, M.D., ***Chairman***
G. J. Boines, M.D.
A. A. Boytar, M.D.
H. B. Cates, M.D.
H. G. DeCherney, M.D.
K. Gurdikian, M.D.
E. S. Parvis, M.D.
D. L. Schafer, M.D.

SCHOOL HEALTH COMMITTEE

The School Health Committee is still concerned about the quality of health education in our schools and with the piecemeal approach to the subject. It was agreed a coordinator of health education would not only improve curriculum content but would also prevent the piecemeal type of health education that is being promoted in our State. A resolution addressing itself to this problem has been prepared for consideration by this Society.

The present policy of routine physical examinations in our public and parochial schools was reviewed, and it was generally agreed that routine physical examinations in the schools be discontinued. The committee recognized that although regular examinations are desirable, the school should not be the site for such examinations. The examinations should preferrably be done in the private physicians' office, and the mechanics should be developed whereby these examinations could be subsidized by the State for children of indigent parents. It was recognized that there are some schools where examinations will need to be conducted at the school setting for some time. The school should have a record of an initial examination on the child's entrance into school, and future examinations would only be performed by referral from the school nurse or teacher. A workshop for the school nurses should be developed for the purpose of establishing certain criteria for referrals, and they in turn would conduct workshops for the teachers in their school. Some of these criteria are increased absenteeism, learning difficulties, any deviations from normal, etc. Screening-type programs such as visual, hearing, orthopedic would be continued.

The Committee also reviewed the state's school immunization program and agreed that these should be continued except that smallpox vaccinations were not recommended to be given at the school setting since the school physician would not have adequate knowledge of the health status of the other members of the family with respect to skin lesions, etc. The Committee felt that the responsibility for smallpox vaccination would best remain with the private physician.

The members of the School Health Committee acknowledge the efforts of Senator Dean C. Steele in supporting Family Life Health Education in our Delaware schools and wish to publicly thank him for this support.

Edward F. Gliwa, M.D., ***Chairman***
S. Bishop, M.D.
A. A. Boytar, M.D.
J. L. Campbell, M.D.
J. A. J. Forest, M.D.
R. W. Frelick, M.D.
G. R. Hilty, III, M.D.
G. Keppel, M.D.
M. Liebesman, M.D.
L. C. Mankin, M.D.
E. G. Orton, M.D.
M. E. Traynor, M.D.
D. T. Walters, M.D.
W. R. Johnson, M.D.

VENEREAL DISEASE COMMITTEE

During 1970 up to now there have been 1052 gonorrhea cases treated in the State of Delaware. This compares with 1283 cases in 1969 up to this date.

Syphilis cases to date in 1970 number 302. Last year there were 231 cases up to this date. These figures include all cases of syphilis in any stage which are newly reported.

There seems to have been an influx of syphilis in its infectious stages this year (primary and secondary). This seems to have been mainly brought in from outside of the State.

The total gonorrhea cases in 1969 numbered 1761. The total number of syphilis cases in 1969 was 340 for the year. As of now we are at 302. The statistics are impressive because this year we have already had nearly as many cases as appeared all last year.

There has been a definite impression that gonorrhea is becoming more difficult to treat. There are more failures of primary treatment courses. Cultural facilities are now being utilized in Wilmington and hopefully will enable detection of asymptomatic carriers.

L. William Ferris, M.D., ***Chairman***
P. F. Ashley, M.D.
S. G. Elbert, Jr., M.D.
V. C. Nah, M.D.
W. L. Porter, M.D.
D. Schetman, M.D.
C. Vileisis, M.D.

AMERICAN CANCER SOCIETY, DELAWARE DIVISION, INC.

In addition to its continuing Professional Education program, providing films and publications for physicians, nurses, dentists, and hospital staffs, the Delaware Division of the American Cancer Society sponsored a session on oral cytology for dentists; participated in a program with the New Castle County Medical Society; funded four lectures for the continuing education of physicians in Kent and Sussex Counties, and two medical education lectures for the Wilmington Medical Center. The theme of the Annual Seminar held in Dover for nurses was *Nursing the Colostomy Patient.*

Another pilot project was the three day in-service training program for non-professional staff at the Home of Merciful Rest, which will be extended this year to other nursing homes.

The scholarship program supported nine undergraduate scholarships in Biological Sciences at the University of Delaware and attendance of two graduate nurses at the Cancer Workshop at New York University and Memorial Hospital, New York. Tomas Kuon, M.D., recipient of the American Cancer Society oncologic fellowship, attended the 10th International Cancer Conference in Houston, Texas, through a Division grant. Through its Public Education Program the Division held close to 600 programs featuring 60 speakers. The American Cancer Society acted as the coordinating office for the Interagency Council on Smoking and Health. In addition to film programs on smoking, there were four Smokers Withdrawal Clinics, jointly sponsored by Delaware Heart, Delaware TB and Health and the Cancer Society.

All media continued to publicize the Society's activities. Henry Davidson of the News Journal attended the Science Writers Seminar in Houston, Texas.

There was an increase in the number of cancer patients helped this year with drugs, dressings, prostheses, blood counts, etc. The Visiting Nurse Association tripled the number of visits to cancer patients supported by the Patient Aid Program.

Atlas Chemical Industries cooperated in a study employing the self-administered vaginal irrigation test.

This year the Board of Directors requested the National Office of the Society to evaluate the present organization and program and make recommendations for the Division's future growth. In the light of increased national commitments in the field of health, the implication for change and challenge within the Society makes the timing of the study most significant.

The American Cancer Society appreciates the continued support and interest of the members of the Medical Society of Delaware. I have been elected this year to represent Delaware as professional delegate to the National Cancer Society, and serve as liaison for the cancer program.

Oscar N. Stern, M.D., ***Liaison***

CHILD DIAGNOSTIC AND DEVELOPMENT CENTER OF DELAWARE, INC.

On June 30, 1970, the Child Diagnostic and Development Center of Delaware completed five and a half years as an evaluation clinic for children with neurologic handicaps from the State of Delaware. The Center continues to be administered through the State Board of Health with financial support being provided by Children's Bureau, Department of Rehabilitation Services. There was only one staff change during the year, and Miss Kathleen Bader replaced Miss Juliette Callaway as the Chief Social Worker for the Center.

During the year 158 new patients were seen for complete evaluation, and 182 children were seen for follow-up examinations, consisting of 326 patient visits. Total visits with evaluation team members amounted to 904 contacts. Our Nurse Coordinator made 63 visits to 55 new patients in the home or school. In addition she followed 16 patients regularly for a total of 79 visits.

Of the new patients seen, 68 were mentally retarded to some degree and 17 others showed developmental delays, making a total of 85 or 53% of new patients who had some degree of developmental deviation. The next largest group consisted of 73 children showing various forms of cerebral dysfunction manifested by behavioral changes, learning problems, or seizures. 75, or just about 50% of children seen, were five years of age or younger. Males outnumbered girls by over two to one. Private physicians continued to be the greatest referral source, accounting for about two-thirds of our referrals. School referrals were a distant second. Most of our children continued to come from Wilmington and New Castle County with only ten percent being referred from Kent and Sussex.

During the year arrangements were made to establish a Developmental Nursery School in conjunction with the Delaware Curative Workshop. This pilot school will endeavor to improve development in children between two and five years of age who may be delayed in one or more areas, considering motor, language, adaptive, and personal-social development. The staff of the school consists of a teacher, speech therapist, physical therapist, occupational therapist, an aide, and a part-time social worker. Two groups of about six children each will attend two sessions daily in the morning. The Department of Health, Education, and Welfare has provided seventy-five percent of the funds needed, and the other twenty-five percent is to be provided by a private source.

Through the Developmental Nursery School we hope to be able to demonstrate that institution of a program of therapy at an early age may enhance ultimate development of handicapped children.

It appears as though the Child Diagnostic and Development Center is providing a needed service for Delaware as referrals continue to increase each year, and the waiting list at the end of this year will be as long as four or five months.

Henry H. Stroud, M.D., ***Liaison***

DELAWARE ASSOCIATION OF MEDICAL ASSISTANTS

I have no report.

Howard Wilk, M.D., ***Liaison***

DELAWARE DIABETES ASSOCIATION

The American Diabetes Association continues to be active in Delaware through the Delaware Diabetes Association.

Doctor Lewis B. Flinn, a charter member of the Delaware Diabetes Association, completed his second term as a member of the Board of Directors of the American Diabetes Association. Doctor Flinn has been active in the American Diabetes Association for over 10 years, serving as Governor from Delaware and as a member of the Board of Directors. Miss Carolyn Medill, an active member of the Delaware Diabetes Association, has been elected to the Board of Directors of the American Diabetes Association. She will serve a three-year term.

Doctor R. Walter Powell was the Delaware Diabetes Association delegate attending the Central Council meeting of the American Diabetes Association held June 11, 1970 at St. Louis, Missouri.

The "'Why Wait?" diabetes detection drive continues on a regular basis with free tests being performed every Wednesday at the Wilmington Medical Center, Memorial Division, independent laboratories and downstate hospitals. Dextrostix technique is being used with the material being purchased and supplied by the Delaware State Board of Health.

The "Young People With Diabetes" group and their parents meet four times a year for discussion and films, with the attendance of local physicians and dietitians. The Delaware Diabetes Association sponsored three diabetic children to attend a summer camp.

Public meetings with guest speakers are held for continuing diabetic education for all. The current total membership of the Delaware Diabetes Association is 270.

Leroy R. Kimble, M.D., ***Liaison***

DELAWARE HEART ASSOCIATION

I have no report.

Richard Lennihan, M.D., ***Liaison***

DELAWARE INTERAGENCY COUNCIL ON SMOKING AND HEALTH

The Medical Society of Delaware has been providing speakers for the Interagency Council on Smoking and Health at their request to help in their anti-smoking campaign.

The Council of the Medical Society of Delaware at its September 3, 1970 meeting approved a contribution to the Interagency Council toward expenses for a representative from Delaware to attend the National Conference on Smoking and Health in San Diego, California.

James M. Hofford, M.D., ***Liaison***

DELAWARE NURSES' ASSOCIATION

An all-day meeting entitled "Teamwork, Logistics and Communications Leading to Tender Loving Care" was held on May 13, 1970 at the Delaware Academy of Medicine under the sponsorship of the Medical Society of Delaware in cooperation with the Delaware Nurses' Association and the Delaware League for Nursing. The meeting was successsful, and organizers were dedicated and interested in the subject. There was disappointment by all the organizers, as well as the participants, in the lack of physician participation.

William H. Duncan, M.D.
for
Edgar N. Johnson, M.D., ***Liaison***

DELAWARE TUBERCULOSIS AND HEALTH SOCIETY

The Delaware Tuberculosis and Health Society is doing an outstanding job in the matter of community health. There has been no startling change in our activities within the last year. This society, as you know, is active in all phases of chest disease from tuberculosis to lung cancer to the rehabilitation of the respiratory cripple to the prevention of smoking.

The Medical Society is cooperating with the Delaware Tuberculosis and Health Society in the observance of Cleaner Air Week in October by supplying speakers for a forum at the University of Delaware and for "Ask the Doctor" on air pollution.

James M. Hofford, M.D., ***Liaison***

MENTAL HEALTH ASSOCIATION OF DELAWARE

I am happy to report that as liaison with the Mental Health Association of Delaware I have met the new director, Mr. Charles E. Sikorski, on several occasions. On one occasion my opinion was requested regarding the advisability of utilizing a certain pamphlet for mental health purposes, and I rendered it in writing. I have been invited to attend a meeting of the board of directors, and plan to do so this fall.

It has been a pleasure to serve the Medical Society of Delaware in this capacity.

Richard J. Kester, M.D., ***Liaison***

NOMINATING COMMITTEE

The Nominating Committee met on September 3 and considered positions to be filled for the year October, 1970 through October, 1971.

The following nominations were made:

Vice President — Edward S. Dennis, M.D.
Secretary — Joseph W. Abbiss, M.D.
Treasurer — Conley L. Edwards, M.D.
Representative to the Delaware Academy of Medicine — Norman L. Cannon, M.D.

For Standing Committees:

Members of the Board of Trustees, Blue Cross-Blue Shield of Delaware, Inc.
John H. Benge, M.D.
John M. Levinson, M.D.
Alfred Lazarus, M.D.
James M. Chase, Jr., M.D.
David Platt, M.D.
C. E. Graybeal, M.D.

Budget Committee
Alfred E. Bacon, M.D.
John A. J. Forest, Jr., M.D.
Martin Gibbs, M.D.
Lawrence Katzenstein, M.D.
Nizar Kuseybi, M.D.
Charles Walker, Jr., M.D.

Publications Committee
Robert B. Flinn, M.D.
Joseph W. Abbiss, M.D.
Davis G. Durham, M.D.
Bernadine Z. Paulshock, M.D.
William J. Holloway, M.D.
Kazuo K. Kimura, M.D.

Public Laws Committee
Allston J. Morris, M.D.
John W. Alden, Jr., M.D.
Joseph E. Belgrade, M.D.
Norman L. Cannon, M.D.
Ronald C. Corbalis, M.D.
Kenneth M. Corrin, Jr., M.D.
Edward S. Dennis, M.D.
Christopher R. Donoho, M.D.
Ali Z. Hameli, M.D.
Calvin B. Hearne, M.D.
Floyd I. Hudson, M.D.
Peter J. Mette, M.D.
Marjorie J. McKusick, M.D.
Gerald J. Savage, M.D.

Program Committee
Alfred E. Bacon, M.D.
William H. Duncan, M.D.
Albert Gelb, M.D.
Charles L. Minor, M.D.
Otakar J. Pollak, M.D.
Herman Rosenblum, M.D.

Board of Medical Examiners
William J. Holloway, M.D.
John H. Furlong, Jr., M.D.
Charles L. Reese, III, M.D.
Carl I. Glassman, M.D.
Henry H. Stroud, M.D.
Warren Johnson, M.D.
Walter Omans, M.D.
Arthur Zimmerman, M.D.
John C. Rawlins, M.D.
H. George DeCherney, M.D.

With the thought that a stronger society is formed with more members personally involved, the Nominating Committee has moved to recommend limits be recognized as follows:

1) That no physician member of the Board of Trustees of Blue Cross-Blue Shield should serve more than three consecutive years. This should not be retroactive as far as the current members are concerned.
2) That the Secretary and the Treasurer not hold office longer than three consecutive years. This should not be retroactive as far as the current officeholders are concerned.

The Nominating Committee further suggested that all committees seek to establish a more involved use of Society members in a rotation of their membership.

Rhoslyn Bishoff, M.D., ***Chairman***
L. M. Dobson, M.D.
C. B. Hearne, M.D.
L. M. Garcia, M.D.
W. Omans, M.D.

As a memorial to the members of the Society who were lost through death during the past year, the assembly arose for a moment of silence as the names were read:

Kenneth M. Corrin, Sr., M.D.
Robert L. Dewees, M.D.
J. Roscoe Elliott, M.D.
Raymond A. Lynch, M.D.
Nina B. Mchitarian, M.D.
Lawrence D. Phillips, M.D.
Paul A. Shaw, M.D.
Harold L. Springer, M.D.
Richard Tobin, M.D.
Nathaniel Young, M.D.

President's Page

THOSE WHO SERVE US

Frequently posed questions deserve exposition and hopefully the exposition will lead to clarification. "What do the AMA and our State Society do for me?" This has been asked by all of us. Answers to this question are many and varied. The county society is a collecting point for the problems and ideas of the individual physician. The banding together of county societies under one state banner is for the advantages offered to fifty such groups over and above hundreds of county societies. The state society should through a solidified front, in our case three county societies, confront the Governor, the Secretary of Health and Social Services, the Insurance Commissioner, the third party representatives, state societies of other professions and the AMA itself for the welfare of our state and every individual member of the Medical Society of Delaware.

What the AMA does for us is the bundling together of what we have done for ourselves at the State level, plus confronting or arranging confrontation for us, at federal government levels, where we can present our viewpoint. If an example is needed here the answer can be found in the services of William O. LaMotte, Jr., M.D. and Henri F. Wendel, M.D.

"What, more dues!" This question is usually followed by, "What does the AMA give me for my dues?" At the disposal of all are the AMA News, Medical Tribune, JAMA and other periodicals published by the AMA. The AMA does research into all administrative matters that affect the physician. The AMA maintains a liaison that permits the physician in the distant areas of Alaska, in the dense streets of New York City or in any part of the world, to present his individual opinion as a resolution to be acted upon by the Reference Committees and the House of Delegates at one of its two annual meetings. The AMA acts as a buffer for medicine against consumer factions, university factions, student factions and government agencies such as the HEW. AMA sets up study programs, accredits schools, hospitals, and specialty boards, and studies social-health problems. All of this is done representing the individual physician.

Occasionally, only occasionally, is the question of more dues answered by, "I know the cost of living is greater, so I expect the cost for the employees and the functions of my county, state, and national society must be raised."

By the time this is published, the newly formed Board of Trustees of the Medical Society of Delaware will have met. Between annual meetings this Board of Trustees is our administrative body working for each member among us, to represent us, within the State of Delaware, in all medical and physician related problems and to be our liaison to better interpretation and function of our AMA. We can, by working together as three constituent county societies, form a strong Board of Trustees united to solidly administer our state and national business until the next annual meeting. When questions arise that relate to the State society or can be coordinated by the State Society, or when the weight of the State Society is needed or when any procedure is in question, reference to our Board of Trustees is necessary and encouraged.

Let us look ahead to a Happy New Year.

Rhoslyn J Bishoff

Editorials

CHANGING AMBULATORY CARE: A REPLY TO DR. GELB

"The traditional patterns of delivery of health care to ambulatory patients attending the medical clinics of our and most American hospitals are obsolete and require drastic overhaul." So began a recent discussion of the subject by Dr. Jack Gelb,* a respected general practitioner who has worked in hospital clinics for as many years as he has practiced private medicine in his own office and is thus very well qualified to see the inadequacies of the present system of delivering ambulatory care in a hospital setting.

In some ways, the situation is even worse than Dr. Gelb has described it and is nationwide. For one important thing, many patients, particularly from the inner city, obtain all their medical care by visiting, not scheduled medical clinics, but rather hospital emergency rooms in spite of the fact that their illnesses are not emergencies. They are treated there and sent home, still without a fixed place in the medical system for ongoing care unless their particular complaint has warranted follow-up. In that case, they are referred from the emergency room to the appropriate hospital clinic, but very often do not attend since their immediate problem has been taken care of. Next complaint or illness, another visit to the emergency room.

Dr. Gelb suggests as a solution abolishing clinics and referring all patients to private offices where care is cheaper on a dollars and cents basis than it is in a medical center. We do not believe this is a realistic suggestion. For one thing, if clinics were abolished, the number of patients who would instead use emergency rooms as their primary care facility would enormously increase, thus further threatening the prime function of these facilities, which is to be able to give rapid treatment to true emergencies.

It is a fact that there are many patients who for various complex reasons prefer to get their medical care in an institutional setting. At the present time, a significant number of the patients who are seen in the hospital clinics of medical centers are recipients of Title 19 funds. In Delaware, this means that their medical care will be fully compensated by public funds no matter where they receive it. But ongoing attempts to refer patients with Title 19 support away from hospital clinics have met with almost no success at all. Nor are all doctors as willing as Dr. Gelb to expand their private practices by including these patients, even with their visits completely paid for by the government and if the transportation could be arranged.

For Dr. Gelb is, we believe, much too optimistic about the possibility of overcoming the geographic realities: the present fact in this as in most communities is that doctors' offices are not conveniently located for inner-city patients to attend. The possibility that a transportation system which would work efficiently and economically enough to transport patients to the suburbs where about half the offices are is unlikely. And if the doctors instead are to come into town to work in "neighborhood health facilities," then what we are saying is that we need our old-fashioned clinics, but we wish to give them a new name, and perhaps a different location, away from the more expensive quarters of the hospital property itself. But we will not by this technique really have changed the present system if the doctors' time is volunteered. For the main reason that the patients in our medical clinics receive care from so many different physicians — often a different doctor at each visit — is that there are so many different physicians working in the clinics. Doctors work one day each week for an hour or so and change each few months. And the reason for these short shifts of work and frequent changes is that this is a volunteer service. It would be totally unrealistic to expect some few physicians to volunteer a larger number of uncompensated hours. Voluntary medical service cannot be a long-term solution if improvement in continuity of patient care is to be achieved.

Then why not pay doctors for doing this care and ask them to work longer hours and more days in hospital clinics or community health centers? In my opinion, this would go a long way towards helping with the problem although for reasons to be next discussed, it would not solve it. For one thing, few doctors have the time to spend more hours away from their own offices even if remunerated. For another, the cost (not the charge, which is often set lower) of a clinic visit is almost everywhere higher than it is in a private doctor's office, and this is without any fee or salary for the doctor. If he were to be paid for his time, then the cost per clinic visit would be even higher, and the fee charged to or for patients would have to be higher than it is now even to keep the total enormous dollar loss to hospitals for outpatient services from rising.

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*Delaware Medical Journal, June 1970.

To make these gloomy matters even worse than they are already, the number of doctors available to give primary medical care is declining. In Delaware, for example, despite our increase in population, the number of general practitioners is declining and their average age is greater than the average age in any other specialty: an indication that little "new blood" is being infused into their group. In that same period, the number of internists has increased, but very many of them limit themselves to some specialty and the number of generalists available for primary medical care has not increased enough to keep pace with present medical demands much less the anticipated increases if all citizens are to be appropriately cared for. A recent informal count by one concerned physician who is himself working too hard, shows a loss in the Wilmington community of about 15 medical doctors in the past several years alone, doctors who have quit practice to work for industry, to specialize in something other than general medicine, or who have moved away. An internist friend recently told me that his office turns away more than ten would-be new patients every day.

One would think that this problem of providing good ambulatory care would be of great importance to these government agencies concerning themselves with the provision of total medical care. Unfortunately, it has not seemed to be. Most of the effort of agencies such as OEO has gone toward the funding of beautiful clinics where salaried physicians and numerous supporting personnel supply *free* care to the very poor. I italicize the word free, because what this really means is that the patient is not charged. The government is underwriting as a research endeavor the entire operation of the facility, and allowing itself to be billed as well for whatever fees are assigned in that community for Title 18 (Medicare) and Title 19 (Medicaid) patients. But the middling poor patient or the middle class patient or even the well-off patient who has no other medical home is not even permitted in these clinics which are only for the destitute. And what happens if the funding for these projects is discontinued?

WMC clinics are open to all lower income persons, even if they are not supported by Title 19 money, which covers the medical expense of only a very limited group: the elderly poor, the blind, mothers on Welfare with dependent children. But at present, in Delaware if you are poor but neither old, blind, nor a mother without a husband, there is still no fiscal support from anyone for your ambulatory care. Although the state has a general assistance program for the impoverished of any age, it does not presently have a medical benefits program to support medical expenses for any but the group mentioned above. So the Wilmington Medical Center has for years financially supported, by default, outpatient care for almost all of its outpatients, only some 20-25% of whom are now at least partially paid for by government programs.

There are many, particularly in the government, who feel that universal health insurance for all economic groups — poor, middling poor, and the often forgotten middle class — will be the only solution to the problem. It may be that it would go a long way, but it is likely to aggravate, not solve, the problems of doctor shortages in the inner city, and the inadequate number of "primary physicians," inner city or suburban. Until these are solved, outpatient facilities — which we formerly called clinics — will continue to be necessary. And our major efforts will have to be towards improving them, for we will not be able to abolish them. *B.Z.P.*

Delaware Academy of General Practice

Psychiatric Seminars

A Seminar Workshop series of twenty sessions (10 in Wilmington and 10 in Dover) for non-psychiatric physicians to improve skills of diagnosis, understanding and management of psychiatric problems will be sponsored by Jefferson Medical College, the Wilmington Medical Center, Inc., and the Delaware Academy of General Practice, January 6 through March 10, 1971. The Wilmington Seminars will be held from 2 to 4 p.m. in the Small Conference Room in the maternity section of the Wilmington General Division, Wilmington Medical Center. The Dover Seminars will be held in the Kent General Hospital, from noon to 2 p.m. Approved for 20 hours' AAGP credit for each series.

WILMINGTON PROGRAM

Moderator — David Platt, M.D.

Jan. 6
Masked Depression and Potential Suicides
John A. Koltes, M.D. *Speaker*
Jerome Kay, M.D. *Moderator*

Jan. 13
Masters and Johnson Revisited — Sex Education
Abraham Freedman, M.D. *Speaker*
Nicholas P. Bash, M.D. *Moderator*

Jan. 20
Psychedelic Drugs
Walter W. Baker, Ph.D. *Speaker*
Charles Strahan, Jr., M.D. *Moderator*

Jan. 27
Differential Diagnosis — The Psychogenic vs. Organic Etiology
Werner R. Welz, M.D. *Speaker*
Irwin Weintraub, Ph.D. *Moderator*

Feb. 3
Management of Psychiatric Units in General Hospitals
Howard L. Field, M.D. *Speaker*
Jerome Kay, M.D. *Moderator*

Feb. 10
Hypnosis — Confrontation and Sensitivity Groups
Alessandro Rizzo, M.D. *Speaker*

Feb. 17
E.S.T., Drug Therapies and Lithium
Theodore Wasserman, M.D. *Speaker*
H. George DeCherney, M.D. *Moderator*

Feb. 24
Alcoholism and Drug Addiction
John E. Mock, M.D. *Speaker*
Joyce Z. Pearson, M.D. *Moderator*

Mar. 3
New Diagnostic Nomenclature
H. George DeCherney, M.D. *Speaker*

Mar. 10
Community Mental Health Centers and High Priority Social Programs
Daniel Lieberman, M.D. *Speaker*
Charles Strahan, Jr., M.D. *Moderator*

DOVER PROGRAM

Moderator — Rhoslyn J. Bishoff, M.D.

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Highlights

PHOTOTHERAPY OF NEONATAL JAUNDICE

Thomas R. C. Sisson, M.D., *Associate Professor of Pediatrics and Obstetrics and Gynecology (Perinatology), Director of Neonatal Research, Temple University, Pediatric Conference, Wilmington Medical Center, October,* 1969.

During an 18-month period phototherapy has been used on 103 infants who have been studied for its effects on hyperbilirubinemia.

As they were born, babies were given random numbers and assigned to light treatment or control. The two groups were further subdivided by birth weight — under or over 2500 grams. During exposure to phototherapy, bilirubin levels were measured at eight-hour intervals while the light therapy was continued for three to four days. Phototherapy was found to decrease bilirubin within eight hours. The smaller infants showed a slower decline for the first 24 hours but a similar rate thereafter. The phototherapy was more effective in ABO incompatibility than in Rh disease. The melanin in Negro skin does not alter the effectiveness of the phototherapy.

In the group with hemolytic jaundice, mainly of the ABO type, four exchanges were done, all in infants who had not been exposed to light therapy. In the group with Rh disease, the number of exchange transfusions necessary seemed decreased.

The effect of phototherapy depends largely on the energy of the photolamp used. "Vitalite" lamp mimics sunlight yet has a lower output in the blue range. The energy output of lamps drops by 40% at 200-250 hours of use. Effect of light on bilirubin degradation has its peak between 440-450 nanometers, the principal output of blue fluorescent lamps. Red and yellow light produces little change in bilirubin. Blue fluorescent light of the intensity used in phototherapy can be injurious to the photoreceptors of the eye, and therefore the eyes of infants so treated should be well shielded from the light.

E. Africa, M.D.

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DELAWARE ACADEMY OF GENERAL PRACTICE

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Deaths

DR. IRVINE M. FLINN

Dr. Irvine M. Flinn, a member of the New Castle County Medical Society for 40 years, died at age 70, on October 29, 1970. He had been a lifelong resident of Wilmington.

Dr. Flinn was graduated from Princeton University in 1921, received his M.D. from the Johns Hopkins Medical School in 1925, then took his specialized training in orthopedic surgery at the New York Dispensary & Hospital.

During his practice years, Dr. Flinn was Chief of Orthopedics at the Delaware, Memorial and St. Francis Hospitals. He was an honorary member of the Curative Workshop and Chairman of its Medical Advisory Committee for 14 years. During World War II, he served from 1942-1945, as a Major in the Army Medical Corps.

He is survived by his wife, Margaret Dashield; two daughters, Mrs. R. James Quillen, Jr., of New Castle, and Mrs. George C. Hering III, of Wilmington; his brother, Dr. Lewis B. Flinn; and seven grandchildren.

DR. WALTER H. LEE, SR.

Dr. Walter H. Lee, Sr., of Middletown, died on October 18, 1970, at age 61. Dr. Lee was a native of Leipsic, a graduate of the University of Delaware and the Medical School of the University of Pennsylvania. He served his internship at the Delaware Hospital and opened practice in Middletown in 1936.

During his years of practice, Dr. Lee served with the Mental Health System, became its chairman and helped reorganize it into the Department of Mental Health. He was also active in a number of civic groups.

Dr. and Mrs. Lee died at the same time. They are survived by two sons, Walter H. Lee, Jr., near Wilmington, and William Swin Lee, of Rehoboth Beach; a daughter, Mrs. Virginia Lee Butters, of New York City; two grandchildren; and Dr. Lee's sister, Mrs. Blanche Lee Berry, of Newark.

DR. NATHANIEL YOUNG

Dr. Nathaniel Young, age 62, died unexpectedly on September 7, 1970. At the time of his death Dr. Young was Medical Director of the Emily Bissell Hospital.

Dr. Young was a native of Ayrshire, Scotland. He came to Wilmington to join the staff of the Emily Bissell Hospital in 1952, and was appointed Medical Director in 1960.

He is survived by his widow, Mrs. Susan Young; a son, Nathaniel, of Cambridge, Massachusetts; and a daughter, Mary Catherine, of Houston, Texas.

DR. PAUL A. SHAW

Dr. Paul A. Shaw, died on May 4, 1970 at age 64, following a short illness. Dr. Shaw was a lifelong resident of Wilmington, graduating from Wilmington High School, and then taking undergraduate work at the University of Delaware, where he received his degree in 1924.

Dr. Shaw graduated in medicine from Hahnemann Medical College in 1928 and became chief of radiology there until 1930. He served as medical officer in the Naval Reserve from 1930-1938 and served on active duty from 1942-1943 with the Army Medical Corps.

In Wilmington, Dr. Shaw was in private practice as a radiologist, and on the staff of the Wilmington Medical Center. He was associate radiologist at the Memorial Division and director of medical education at that Division.

Dr. Shaw was a member of the local and state medical societies, of the AMA, the American College of Radiology and the Radiological Society of North America.

He is survived by his widow, Mrs. Ruth T. Shaw, of Westover Hills; and a brother, Edmund, also of Wilmington.

THE FORUM

Environment And Health

BILLIONS OF CHRISTMAS SEALS

Joanne E. Richmond

The first Christmas Seals, designed and sold in Delaware in 1907, helped to save a small shack along the banks of the Brandywine, which was being used as a sanitorium for tuberculosis patients. At that time, little was known about the "White Plague" except that rest was proving a cure for it, whereas in recent years medical science has made such great strides in the development of chemotherapy treatment that tuberculosis could soon become a disease found only in the annals of medical history.

Since that kind-hearted lady named Emily Bissell devised the first Christmas Seal Campaign, billions of the decorative seals have been sold in Delaware and across the nation. The original anti-tuberculosis associations which sprang up have expanded their programs. The Delaware Anti-Tuberculosis Society is now called the Delaware Tuberculosis and Health Society to indicate a wider range of interest, and the $150,000 raised during the last year's Seal Campaign in Delaware is being used to fight air pollution, cigarette smoking, tuberculosis and other respiratory diseases as well as to improve the general health and welfare of all citizens in the state.

Tuberculosis, the original cause, still cannot be forgotten — especially by the 94 new victims in Delaware last year. Many of these cases were detected through a free screening program provided by State and Christmas Seal support. One out of four Delawareans availed himself of this free x-ray service during the past year; all adults should be encouraged to do so.

Other respiratory diseases, especially emphysema, have become more prevalent and are making demands on medical researchers for better treatment and, hopefully, for cure. During 1969 the Christmas Seal x-ray program diagnosed 600 cases of respiratory and chest diseases. Christmas Seal donations helped to establish and then support a pulmonary function laboratory, which serves more than 1300 patients each year, and a pleural-pneumonia-like organism laboratory, both in the Wilmington Medical Center. Dr. James M. Hofford, Director of the former, notes that in the most severe cases of respiratory diseases the patients have two things in common: they are almost always smokers and have lived and worked for years in a highly polluted environment.

Thus, any organization concerned with controlling respiratory diseases must ultimately attack these contributing factors. The Delaware Tuberculosis and Health Society has, both as a funding member of the Delaware Interagency Council on Smoking and Health and as the supporting agency for the Delaware Citizens for Clean Air. In addition, two staff members devote much time to educational efforts against cigarette smoking and air pollution.

In breaking away from a strictly disease-oriented background, tuberculosis associations are working to improve the general health and welfare of all citizens, but most importantly, of the disadvantaged. In Delaware, Christmas Seal funds are helping to pay the salary of a health worker in an inner city neighborhood health center.

While change has been altering the goals of the tuberculosis associations through the years, one factor has remained constant: the generous support of all citizens through Christmas Seal donations.

Thank You!

Miss Richmond is Director of Education for the Delaware Tuberculosis and Health Society.

This page is sponsored by the Delaware Tuberculosis and Health Society.

In Brief

In the News

The following Delaware physicians who have met the high standards of the American College of Physicians have been granted Fellowship in that 54-year-old international medical specialty society: David J. Reinhardt, III, M.D., Lewes; Marvin H. Dorph, M.D., Kazuo K. Kimura, M.D., Alfred Lazarus, M.D., and William J. Vandervort, M.D., Wilmington.

Recent appointments by Governor Russell W. Peterson include: Margaret O'Brien, M.D., Wilmington, to the Board of Trustees of the State Employees' Retirement Fund; and Pierre L. LeRoy, M.D., Wilmington, to the Board of Trustees of the Delaware Institute of Medical Education and Research.

The American Academy of General Practice was represented by Henri Wendel, M.D. at the AMA's seminar, *The Population Problem and the Physician*, held this year in Washington, D.C. Dr. Wendel was recently appointed to the Commission on Environmental Medicine of the AAGP.

More Family Doctors

The House of Representatives has approved legislation to increase the number of family doctors in the United States. The vote on H.R. 19599, an amendment to the Public Health Service Act, was 346 to 2. The bill authorizes appropriation of 425 million dollars over a 5-year period to support training of family doctors in medical schools and hospital residency programs, training of teachers to teach family medicine, and training of paramedical personnel to assist family doctors to treat more patients in their practice. The residencies are geared specifically to the new specialty of family practice approved by the AMA and other authoritative medical bodies in 1969.

Speakers on "Ask the Doctor"

Speakers for January, 1971, on the Tuesday radio program (11:05 a.m. WDEL) produced by the Medical Society of Delaware are: January 5, Thomas R. Brooks, M.D., *Current Thinking about Contraception;* January 12, Patrick F. Ashley, M.D., *Smoking;* January 19, Peter V. Martin, M.D., *Hemorrhoids;* January 26, Norman R. Robinson, M.D., *Cancer of the Larynx.*

Malnutrition and Mental Retardation

Severe malnutrition of either the mother, the baby while in early stages of development or both, is a suspected cause of mental retardation, says the National Society for Medical Research. A study of severely malnourished Chilean children, both of those who are alive and those who have died, indicates similar results.

The dead children's brain size and head size had also been reduced due to an inhibition of cell division. Those children who survived showed retardation of their motor and intellectual development. Another recent report by the National Research Council says that high incidences of low birth weights and of deaths connected with low weight are found in the USA, which ranked 13th among 40 countries in 1966 in infant mortality.

Delaware's Environmental Control

Delaware was one of the states intensifying environmental control by appropriating $1 million for a pioneering effort to develop a waste recycling plant which would convert all wastes into substances that could be sold as raw materials or fertilizer.

CLINICAL NOTICES AND MEETINGS

Colon-Rectal Cancer Conference

A National Conference on Cancer of the Colon and Rectum, sponsored by the American Cancer Society will be held at the Hotel del Coronado, San Diego, California, January 7 to 9, 1971. For information write: Roald N. Grant, M.D., Vice President for Professional Education, American Cancer Society, 219 East 42nd Street, New York, New York, 10017.

Essay Contest

The 1971 Alfred A. Richman Essay Contest presented by the American College of Chest Physicians offers undergraduate medical students the opportunity to submit manuscripts on any phase of the diagnosis and treatment of cardiovascular or pulmonary disease. Three cash prizes are awarded annually. The First Prize will be 500; Second Prize $300 and Third Prize, $200. Each winner will also receive a certificate of merit. The official application form may be secured by writing Essay Contest, American College of Chest Physicians, 112 East Chestnut Street, Chicago, Illinois, 60611. All entries are due by March 31, 1971.

ACCP PG Program

The American College of Chest Physicians will present a postgraduate course, *X-ray Description of Pneumoconiosis,* January 15-17, 1971, in Pittsburgh, Pennsylvania. For information write: American College of Chest Physicians, 112 East Chestnut Street, Chicago, Illinois, 60611.

Clinical Diabetes Conference

The American Diabetes Association in cooperation with the Mayo Clinic and the University of Minnesota School of Medicine and Health Sciences Center announces the Eighteenth Postgraduate Course: *Diabetes in Review,* to be held January 20-22, 1971, at the Kahler Hotel, Rochester, Minnesota.

ACP Courses

The American College of Physicians announces the following courses: *Coronary Atherosclerotic Heart Disease: Prevention, Treatment and Rehabilitation* to be held January 13-15, 1971, at Grady Memorial Hospital, Atlanta, Georgia; and *Recent Advances in Internal Medicine* to be held January 18-22, 1971, at the Medical College of Georgia, Augusta, Georgia. For further information write: Edward C. Rosenow, Jr., M.D., Executive Director, American College of Physicians, 4200 Pine Street, Philadelphia, Pa., 19104.

Open Meeting

The Health Care Delivery Committee of the Medical Society of Delaware invites all members of the Society to an open meeting Thursday, January 7th, 1971, at 8:00 p.m., to be held at the Academy of Medicine to hear Directors of American Institutional Developers (AID) present their approach to health care delivery with the "medical campus." This organization, a partially owned subsidiary of Insurance Company of North America, has developed and built this combination of facilities making a campus of medical offices, an acute hospital and an extended care unit throughout the country. They are planning to construct such a medical campus north of Wilmington.

Medical Aspects of Sports Seminar

The Division of Athletics, University of Delaware, in cooperation with the Medical Society of Delaware, will present current information, concepts, and techniques on the prevention and treatment of athletic injuries and the conditioning of athletes, on Saturday, January 23, 1971, at the Wilcastle Center of the University of Delaware, 2800 Pennsylvania Avenue, Wilmington. It is open to all team physicians, trainers, coaches, athletic directors, student trainers, nurses, and others in the field of physical education from universities, colleges, community colleges, public, private, and parochial secondary schools, and agencies involved with physical education programs. The fee, $20 per person, includes instruction, seminar materials and lunch. Register in advance before January 15, 1971.

Heart Symposium

The Arizona Heart Association will hold its Fourteenth Annual Cardiac Symposium at the Arizona Biltmore Hotel, Phoenix, Arizona, January 22-24, 1971. For information write the Arizona Heart Association, 1720 E. McDowell Road, Phoenix, Arizona, 85006.

Postgraduate Symposium

The Department of Otolaryngology at the Jefferson Medical College of Thomas Jefferson University, Phila., announces a Postgraduate Symposium April 1-2, 1971 with the theme, *Therapy in Otolaryngology — 1971.*

Concentrating on both medical and surgical treatment in the broad area of Otolaryngology, it will include Otology, Rhinology, Sinus Disease, Allergy, Head and Neck Cancer, Trauma, and Maxillofacial Surgery. The registration fee of $50 for practicing physicians and $10 for residents will include lunches on both days, and a dinner meeting. Contact the General Chairman, William H. Baltzell, M.D., Department of Otolaryngology, Jefferson Medical College, 1025 Walnut Street, Philadelphia, Pa., 19107, for details.

CLASSIFIED AD SECTION

Advertisements under the Classified Ad Section are charged at the rate of 30 words or less, set solid. One insertion $4.00. Call the Journal office, 658-7596 for further information or placement. All advertisements are payable in advance. The Editorial Board reserves the right to edit copy. Closing date for new copy is the first of the month for inclusion in the current issue.

Classified advertisements of a professional nature are free to members.

ORTHOPEDIC SURGEON: Finishing four-year Mayo residency in July, 1971. Interested in opportunity to practice in Delaware.

RADIOLOGIST, DIAGNOSTIC: Available July, 1971. Interested in Delaware openings.

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